User Manual

Rapid Insight®
data driven decisions™

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ABOUT VEERA

Veera (Visual Engine for Enterprise Reporting and Analysis) is a powerful tool that allows you to turn data into actionable knowledge. Using Veera, you can transform data into workflow processes, create and share jobs with colleagues and simplify data and reporting needs. Having the ability to merge and integrate data from any one or multiple disparate data sources allows for:

- A revolutionary new way of working with data
- Implementing solutions quickly, based on existing architecture
- Getting the right data, at the right time, to make the right decisions
- Streamlining and automating reporting
- Easily finding and tracking errors in current reporting processes
- Trusting results

In short, Veera makes meaningful data highly accessible whenever you need to ask questions of your data.

This Document

Though Veera is designed to be intuitive, users may not always agree. This User Manual is intended to provide in-depth descriptions of all aspects of the program's function and features.

Hardware Requirements

Systems intending to host Veera must meet the following hardware requirements:

Minimum System Requirements

- Windows Vista SP2 or later, or Windows Server 2008 SP2 or later
- .NET Framework 4.0 and its requirements
- 2 GHz 32-bit (x86) or 64-bit (x64) processor
- 1 GB of system memory
- 20 MB available hard drive space
- 32 MB of graphics memory
- Internet access

Recommended System Requirements

- Windows 7 x64 or later
- .NET Framework 4.0 and its requirements
- 2.8 GHz 64-bit (x64) processor
- 4 GB of system memory
- 1 GB available hard drive space
- 512 MB of graphics memory
- Internet access

Additional Resources

For more specialized information, try one of these other Veera documentation resources:

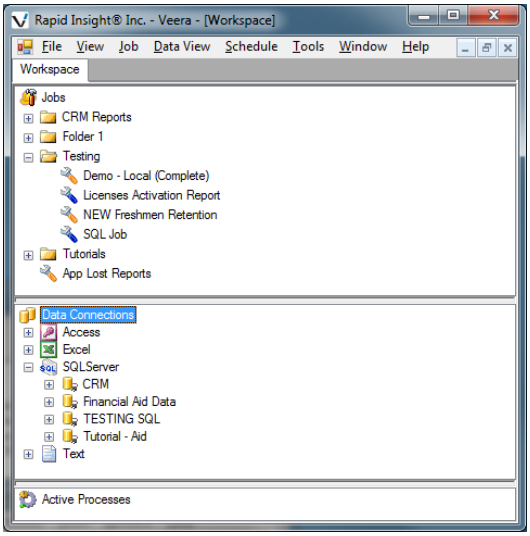
- Installation Guide; provides step-by-step instructions for installing the program
- Getting Started Guide; a quick reference and tutorial - includes several “How To…” examples
- In-program Help; accessed from the Veera Toolbar menu
- In-program “Tooltip” help; placing the mouse cursor over a feature often causes a brief description to appear

VIEWS IN VEERA

Workspace Tab

DESCRIPTION

The Workspace tab (also known as the "Operational Workspace") automatically opens when the program first starts. It serves as the place where users organize and manage data projects (see ***Jobs in the Workspace***), data source connections (see ***Data Connections in the Workspace***), and see what jobs might currently be running (known as "Active Processes").



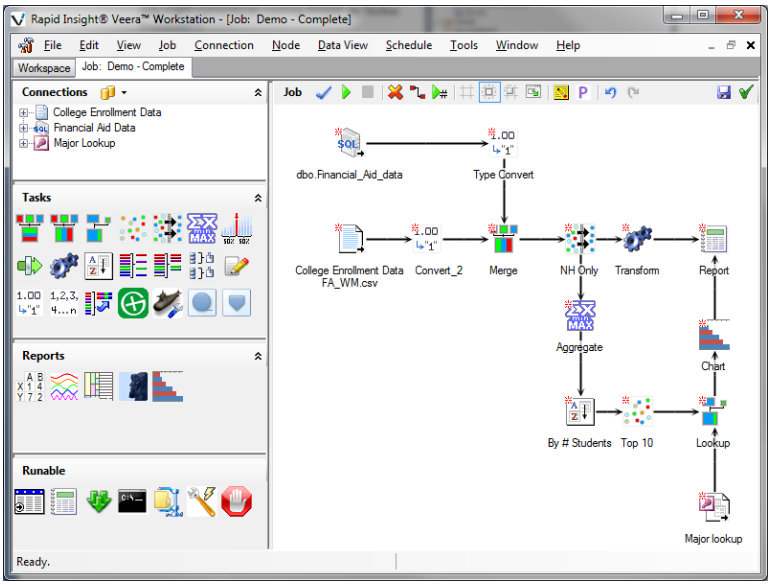
MAIN MENU

The main menu appearing at the top of the window provides several options unique to Workspace when in view. Note that there is only one Workspace tab. If closed, it can be reopened by selecting Workspace from the program's Window toolbar menu.

Job Tabs

DESCRIPTION

A Job tab (also known as the "Job Workspace") opens when a user creates a new job or selects an existing job. Jobs are projects, created by users, that gather data from one or more data sources (known as "Connections"), manipulate that data with various tools (known as "Tasks"), and produce one or more outputs in the form of files or report s (known as "Reports" and "Runables"). Many Job tabs may be opened, though only one can be viewed at a time.



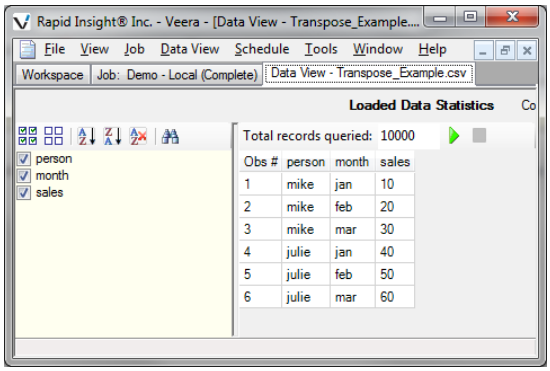
MAIN MENU

The main menu appearing at the top of the window provides several options unique to Jobs tabs when one is in view.

Data View Tabs

DESCRIPTION

A Data View tab opens when a user selects “Data View” from the toolbar menu or “View Data” when right-clicking on a connection, task or runable. The tab will display a sample of the data records from the file currently selected. Many Data View tabs may be open, though only one can be viewed at a time. If the toolbar menu View > Tabs is turned off and the Window menu to Tile the windows is used, several data views can be reviewed simultaneously.


Rapid Insight® Inc. - Veera - [Data View - Transpose_Example....
File View Job Data View Schedule Tools Window Help
Workspace
Job: Demo - Local (Complete)
Data View - Transpose_Example.csv
Loaded Data Statistics
Total records queried: 10000
person
month
sales
Obs # person month sales
1 mike jan 10
2 mike feb 20
3 mike mar 30
4 julie jan 40
5 julie feb 50
6 julie mar 60

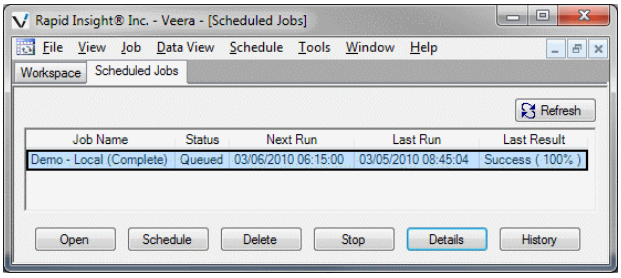
MAIN MENU

The main menu appearing at the top of the window provides options similar to those offered when the Workspace tab is selected.

Scheduled Jobs Tabs

DESCRIPTION

The Scheduled Jobs tab opens when a user selects Schedule > Scheduled Jobs from the toolbar menu. The tab will display the names of those jobs scheduled to run, along with the current status, next scheduled run date/time, last scheduled run date/time and the last run result. See ***Scheduling Jobs*** for a description of job scheduling



A user may also use the buttons located at the bottom of the tab to perform a number of tasks. These include:

OPEN: Opens the job selected in the list

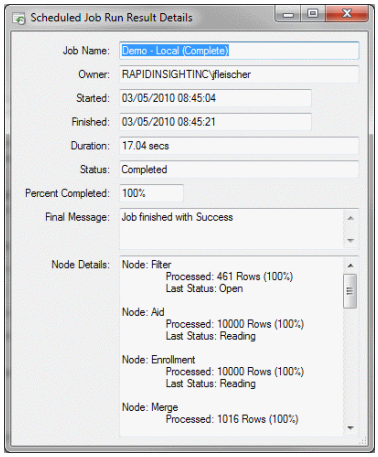
SCHEDULE: Opens the Schedule Viewer window for that job schedule

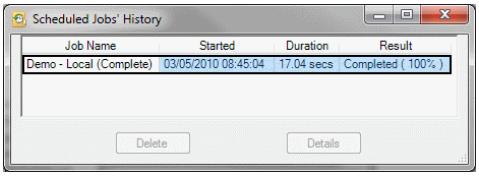
DELETE: Deletes the selected schedule

STOP: Stops the selected scheduled job from running

DETAILS: Displays details of the last running of the selected job schedule

HISTORY: Displays details of all the scheduled runs of the job selected




Scheduled Jobs' History
Job Name Started Duration Result
Demo - Local (Complete) 03/05/2010 08:45:04 17.04 secs Completed (100%)
Delete
Details

MAIN MENU

The main menu appearing at the top of the window provides options identical to those offered by a Data View tab.

Docking / Undocking Windows

DESCRIPTION

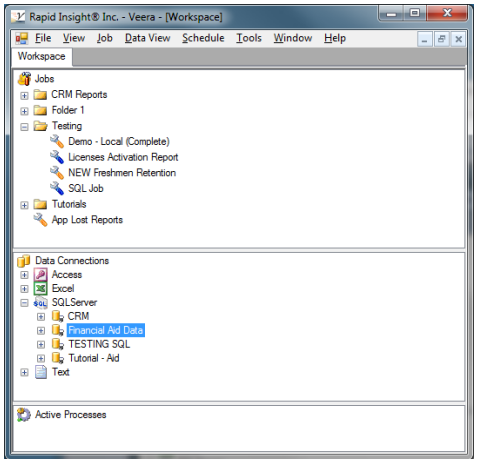
With the exception of the Workspace tab, tabs may reordered in the program or even undocked from Veera to float as a separate window. This is done by selecting the tab then clicking and dragging it to a new location. The tab will be removed from the list and a free-floating window of the same name and contents will appear on the screen.

To dock a floating Veera window, select the frame then on its copy of the menu click VIEW > DOCKED. The free-floating frame will disappear and a tab of the same name and content s will appear in the program window.

WORKSPACE TAB ("*OPERATIONAL WORKSPACE*")

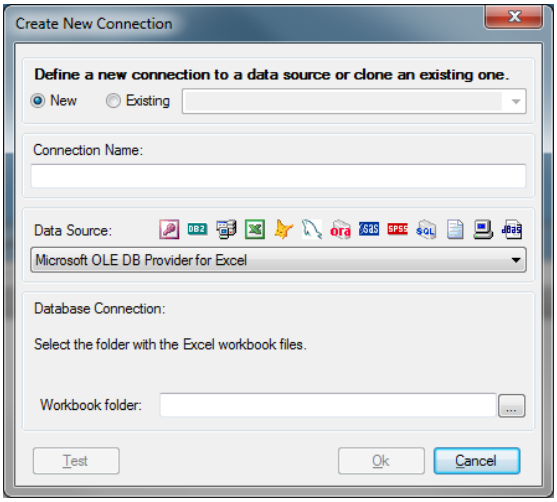
Data Connections in the Workspace

DATA CONNECTIONS OVERVIEW



A data connection (or just "connection") can be thought of as a pointer. It shows Veera where data is located on the local computer, or on another computer on the local network. It can reference either a file folder or a database on a server. Once created, a connection may be used over and over again by any number of different jobs. The Data Connections section of the Workspace tab is where all connections used throughout the product appear and are managed (created, modified or deleted). New connections can also be made from any Job tab.

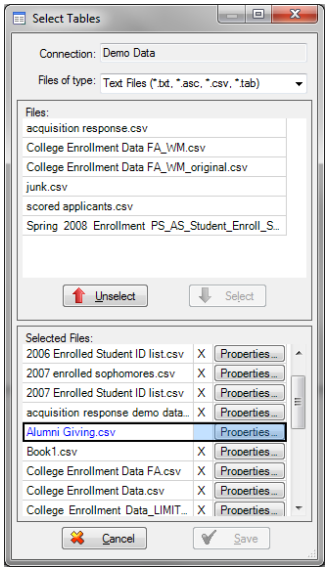
Creating a Data Connection



Note - creating a data connection does not actually create any folders, files or tables. It only creates a reference within Veera pointing to an existing folder on the host computer or network.

- Open the Create New Connection dialog box by doing one of the following:
  - Right-click anywhere in the Workspace > Data Connections section and select 'New Connection',
  - Right-click in any Jobs > Connections section and select 'New Connection', or
  - Select Toolbar > Connection >Add New
- Enter a unique Connection Name.
- Select a Data Source by either
  - Clicking the icon of the corresponding data type, or
  - Selecting the corresponding data type from the drop down list.
- The dialog box changes to request the information unique to each type. This means either
  - Identifying the folder location, or
  - Identifying the database server location, database name and connection information

Selecting Tables for a Data Connection



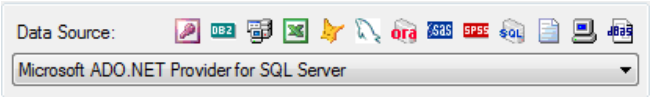
Once a data connection is saved, the user can create references to the specific files, worksheets, or database tables/views found in that location. These specific references are collectively referred to as "tables". Tables appear beneath their parent connections in alphabetic order. To add a table:

- Right-click on the data connection and choose Select Tables.
- Select the file(s), worksheets, etc. to be used from the connection location.
- For Text file data connections, the properties often need to be defined (see ***TEXT SOURCE TYPE)***
- If the desired table does not appear in the Files/Table list, right-click in the space and click Add Table By Name to manually enter the file/table name into the list.(not available for Excel or Text).

Data Connections Source Types

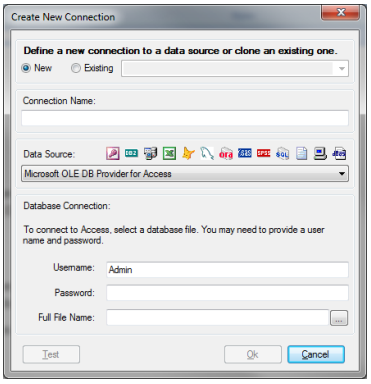
Connections are automatically grouped by data source type. Data source types Veera can support include:

- Access
- DB2
- DSN (ODBC Connections)
- Excel
- FoxPro
- MySQL
- Oracle
- OtherDBMS
- OtherFile
- Paradox
- PostgreSQL
- SAP HANA
- SAS
- SPSS
- SQL Server
- Text/CSV
- UDL
- Vertica
- xBase
- XML



Which data source types are available is often dependent upon whether the drivers or providers for that type are installed on the computer. Drivers (OLE DB, ODBC, ADO.net or native drivers) are freely available for download from the corresponding manufacturer.

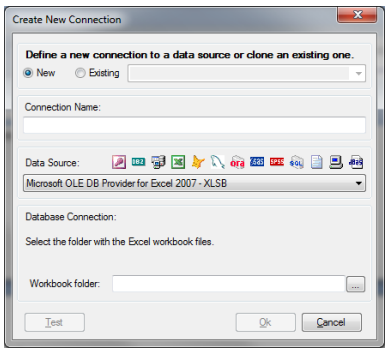
ACCESS SOURCE TYPE



Configuring an Access-based data source doesn't require a server location or connection credentials. However, unlike other connection types, it does require specifying the file name at this stage.

Also note that there are two Access file types to choose from – the Office 2007 version (.accdb) and the legacy JET version (.mdb). The correct file type must be selected for the intended data source to appear as an option.

EXCEL SOURCE TYPE



Configuring an Excel-based data source requires specifying the file folder location. When the specific data table is being identified, the user will specify the workbook file name and choose between the worksheets within the workbook. In this way, each sheet can serve as a separate data source.

Also note that there are three Excel file types to choose from – two Office 2007+ versions (.xlsx and xlsb) and the legacy version (.xls). The correct file type must be selected for the intended data source to appear as an option.

Rapid Insight Excel Driver

It has come to our attention that Microsoft Excel Input data drivers attempt to determine a column's data type using the first eight records and, as a result, often passes numeric values as nulls. Formatting of the corresponding column in Excel has no effect on this behavior.

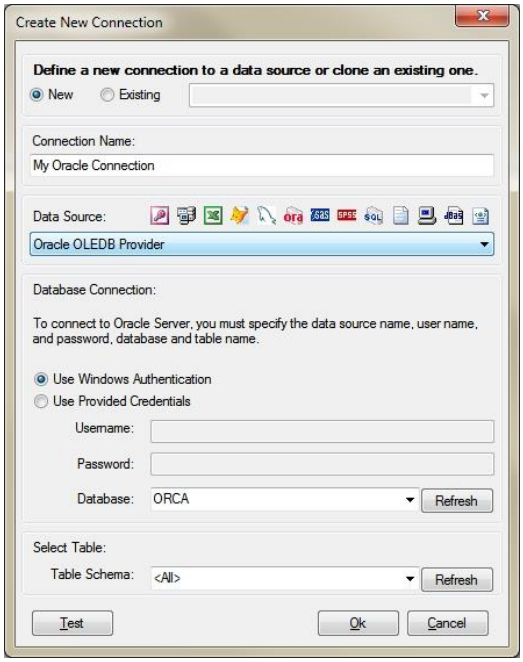
To mitigate this, Rapid Insight has developed its own Excel data driver for use when connecting to data sources and destinations. It appears in the driver list as “Excel File (*.xls, *.xlsx, *.xlsb)” and is the default driver selected when the Excel icon is clicked.

The driver actively reads the formatting of the original worksheet cells to develop its columnar data types. When this information is not available, it will attempt to infer this information from the fields in a column. The number of fields used to make this educate guess is specified in the Type Guess Sample Size field under the Options menu.

As an output driver, it takes the Veera column types and matches them to corresponding Excel format types when writing to a worksheet.

ORACLE SOURCE TYPE

Setting up a PC to connect to your Oracle Database



If the user is currently connecting to the Oracle server from their machine, then it’s a simple matter of picking an appropriate driver from the list of available drivers as part of their Veera data connection. We recommend either the Oracle OLEDB, ADO.NET for Oracle, or .NET for Oracle drivers, though any Oracle driver that appears in the list of available drivers should work.

If the user isn't currently connecting to Oracle, their machine needs to be configured to do so. Usually this requires an IT person to setup the machine.

- Verify that the IT department will allow the Veera user to directly access the Oracle Database.
- Have IT create access credentials on the Oracle server, granting the Veera user at least read access to the desired database, schemas or specific tables.
- Identify and install the correct Oracle Client, with all available drivers, on the Veera user’s computer. The Oracle Client version should be compatible with the Oracle server’s version.

If known, the user may type the Oracle server and database names directly into the appropriate fields.

The only method Veera supports for "browsing" for the available Oracle database servers is TNS. In that case the local names can be seen in the drop list for the of the connection window.

- Using the Oracle Net Configuration (or comparable) tool, generate a “tnsnames.ora” file and placing it in the correct folder.

If the user gets the error "Could not find file '%TNS_ADMIN%\tnsnames.ora'." when using the Databases drop down list, this means that the computer needs help locating the tnsnames.ora file.

- Confirm that the TNS_ADMIN environment variable (found under CONTROL PANEL > SYSTEM > ADVANCED SYSTEM SETTINGS > ENVIRONMENT VARIABLES) points to the tnsnames.ora file folder. The IT department may need configure this.

Once all the required information has been filled out, the Test and Ok buttons become enabled. The user may test the connection (confirming the information is valid) or save the contents and exit the window.

SAS SOURCE TYPE

To download the driver for SAS, navigate to: http://www.sas.com/apps/demosdownloads/oledbproviders_PROD_9.1.3_sysdep.jsp?packageID=000366

SPSS SOURCE TYPE

To download the driver for SPSS, navigate to: http://www.spss.com/drivers/clientSPSS.htm

SQL SERVER SOURCE TYPE

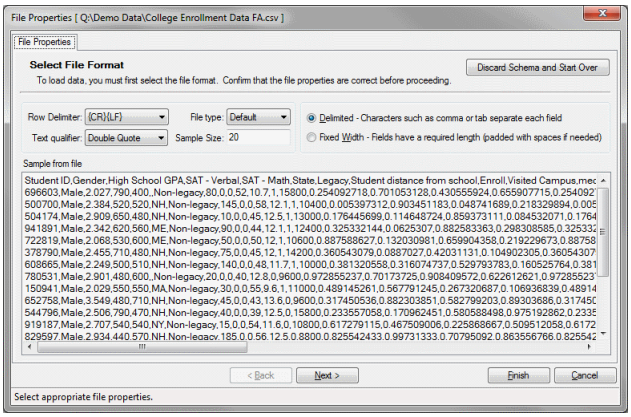
Configuring a SQL Server-based data source requires specifying a server location, connection credentials, database name, and table schema.

TEXT SOURCE TYPE

If a text type data connection is saved, the user will then need to create references to the specific text files that will serve as data sources. If the text file selected does not have an [X] beside the file name, the properties need to be defined. (NOTE – typically, the defaults that appear on the following three windows will be acceptable and no changes will need to be made.) Click the Properties button associated with the file to start the process.

File Properties Tab

The first tab of the File Properties window defines the file’s general data formatting. These include:



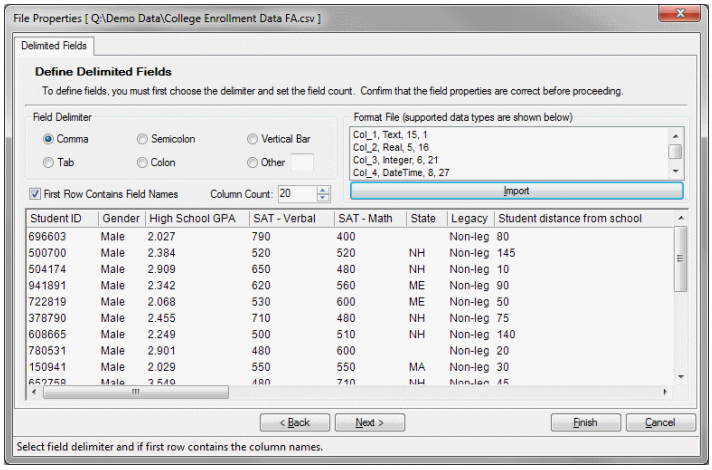
- DELIMITED or FIXED WIDTH: Determines how the data will be separated into columns.
- FILE TYPE: Special format types used under special circumstances. Options are: Default, OEM, ASCII, Unicode, UTF8, UTF7
- ROW DELIMITER: Determines what constitutes a new data row. Options are: {CR} (carriage return), {LF} (line feed), {CR}{LF} (default), comma, semicolon, tab, and vertical bar.

- TEXT QUALIFIER: Determines how data that contains a column delimiter is quoted. Options are: Double Quote (default), Single quote, and none.
- SAMPLE SIZE: Defines the number of data rows to load to evaluate the structure. Default is 20.

Delimited Fields Tab

This tab appears only if the DELIMITED option was chosen on the File Properties Tab. Provides a sample of the data set using the Field Delimiter chosen.

- FIELD DELIMITER: Options include: comma (default), semicolon, tab, vertical bar, tab, colon, and other – with entry field.
- FIRST ROW CONTAINS FIELD NAMES: Yes or no checkbox.
- COLUMN COUNT: Drops existing or adds new data columns. Default is based on the current column count detected by the delimiter selected.

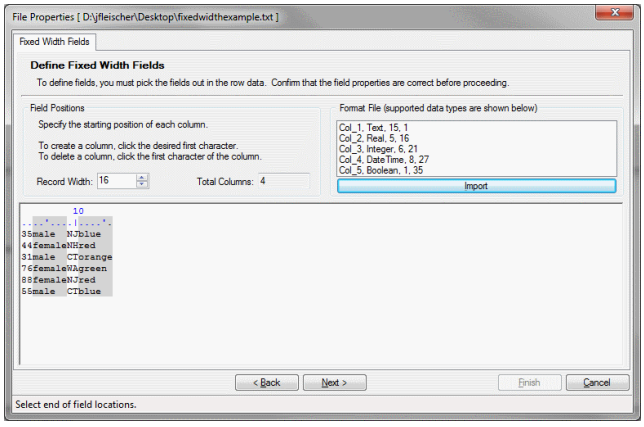

File Properties [Q:\Demo Data\College Enrollment Data FA.csv]
Delimited Fields
Define Delimited Fields
To define fields, you must first choose the delimiter and set the field count. Confirm that the field properties are correct before proceeding.
Field Delimiter
Comma
Semicolon
Vertical Bar
Tab
Colon
Other
Format File (supported data types are shown below)
Col_1, Text, 15, 1
Col_2, Real, 5, 16
Col_3, Integer, 6, 21
Col_4, DateTime, 8, 27
Import
First Row Contains Field Names
Column Count: 20
Student ID | Gender | High School GPA | SAT - Verbal | SAT - Math | State | Legacy | Student distance from school
696603 Male 2.027 790 400 Non-leg 80
500700 Male 2.384 520 520 NH Non-leg 145
504174 Male 2.909 650 480 NH Non-leg 10
941891 Male 2.342 620 560 ME Non-leg 90
722819 Male 2.068 530 600 ME Non-leg 50
378790 Male 2.455 710 480 NH Non-leg 75
608665 Male 2.249 500 510 NH Non-leg 140
780531 Male 2.901 480 600 Non-leg 20
150941 Male 2.029 550 550 MA Non-leg 30
< Back
Next >
Finish
Cancel
Select field delimiter and if first row contains the column names.

- IMPORT FORMAT FILE: If the user chooses to set up the data columns automatically, the user needs to import a format file (.fmt) with the desired parameters. To start the process, the user clicks on the IMPORT button.

  In the example shown, a format file has been selected. Its contents appear in the sample window. The user uses the Field#1, Field#2, Field#3 and Field#4 entries to help Veera interpret the layout of the format file. This, in turn, defines the four columns in the data file. Starting Column, Column Name, Length and Type should all be defined. The sample format file displayed shows the valid choices for Type.

Fixed Width Fields Tab

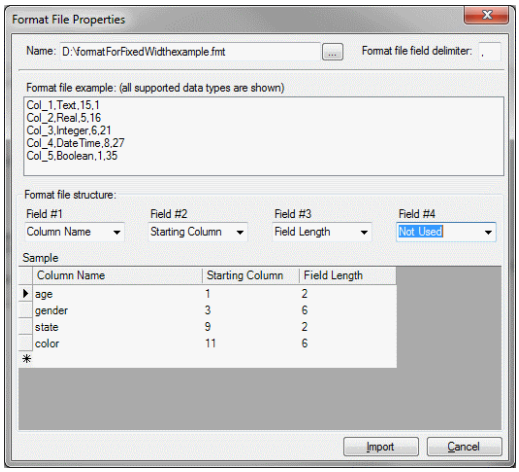
This tab appears only if the FIXED WIDTH option was chosen on the File Properties Tab. The user may manually set the data column's start and end points or may import a format schema to do this automatically.


File Properties [D:\jfleischer\Desktop\fixedwidthexample.txt]
Fixed Width Fields
Define Fixed Width Fields
To define fields, you must pick the fields out in the row data. Confirm that the field properties are correct before proceeding.
Field Positions
Specify the starting position of each column.
To create a column, click the desired first character.
To delete a column, click the first character of the column.
Record Width: 16
Total Columns: 4
Format File (supported data types are shown below)
Col_1, Text, 15, 1
Col_2, Real, 5, 16
Col_3, Integer, 6, 21
Col_4, DateTime, 8, 27
Col_5, Boolean, 1, 35
Import
35male NJblue
44femaleNHred
31male CIorange
76femaleWAgreen
88femaleNJred
55male CIblue
< Back
Next >
Finish
Cancel
Select end of field locations.

- FIELD POSITIONS – RECORD WIDTH: sets the intended width in characters of each row of data
- FIELD POSITIONS – FIELD: To manually set column start and end points, the user clicks on the point in the sample data where a data column starts. Columns will alternately shade as they are added. User may remove a column pointer by clicking on the same point. The TOTAL COLUMNS counter keeps track of the columns designated.

- IMPORT FORMAT FILE: If the user chooses to set up the data columns automatically, the user needs to import a format file (.fmt) with the desired parameters. To start the process, the user clicks on the IMPORT button.

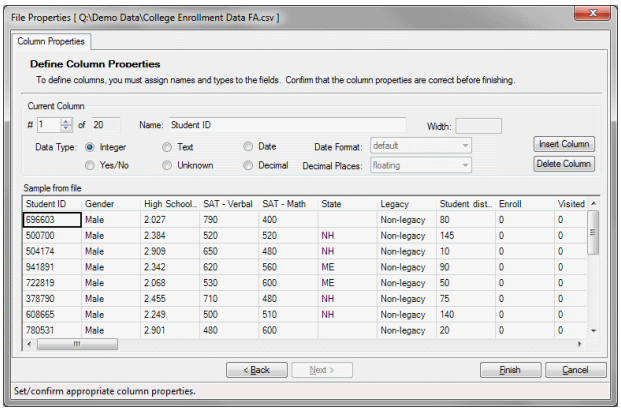
  In the example shown, a format file has been selected. Its contents appear in the sample window. The user uses the Field#1, Field#2, Field#3 and Field#4 entries to help Veera interpret the layout of the format file. This, in turn, defines the four columns in the data file. Starting Column, Column Name, Length and Type should all be defined. The sample format file displayed shows the valid choices for Type.



Column Properties Tab

This final tab of the File Properties window defines the data types and labels of each data column. The user clicks on the column from the sample data field and then sets the following values.

- CURRENT COLUMN: Alternate method for selecting the column being configured.
- NAME: Column's name.
- DATA TYPE: The supported types include Integer, Text, Date, Yes/No, Unknown, and Decimal.
- DATE FORMAT: If the column's data type is DATE, this field sets the date formats as they will appear in Veera coming from this source.
- DECIMAL PLACES: If the column's data type is DECIMAL, this field sets the number of digits as they will appear in Veera coming from this source
- INSERT/DELETE COLUMN: Drops existing or adds new data columns which can then be configured.


File Properties [Q:\Demo Data\College Enrollment Data FA.csv]
Column Properties
Define Column Properties
To define columns, you must assign names and types to the fields. Confirm that the column properties are correct before finishing.
Current Column
Name: Student ID
Width:
Data Type: Integer Text Date Yes/No Unknown Decimal
Date Format: default
Decimal Places: floating
Insert Column
Delete Column
Sample from file
Student ID Gender High School.. SAT - Verbal SAT - Math State Legacy Student dist.. Enroll Visited
696603 Male 2.027 790 400 Non-legacy 80 0 0
500700 Male 2.384 520 520 NH Non-legacy 145 0 0
504174 Male 2.909 650 480 NH Non-legacy 10 0 0
941891 Male 2.342 620 560 ME Non-legacy 90 0 0
722819 Male 2.068 530 600 ME Non-legacy 50 0 0
378790 Male 2.455 710 480 NH Non-legacy 75 0 0
608665 Male 2.249 500 510 NH Non-legacy 140 0 0
780531 Male 2.901 480 600 Non-legacy 20 0 0
< Back
Next >
Finish
Cancel
Set/confirm appropriate column properties.

XML SOURCE TYPE

Veera makes use of an integrated driver to both read and write XML-formatted data. Users should be aware of the following conditions that may affect their use of this data type.

The XML driver will…

- Read the records from any XML-formatted data file
- Parse incoming data records using schema imbedded in the XML file.
- Parse incoming data records using schema contained in a co-located XSD (XML Schema Definitions) file if it is named the same as the XML file.
- Ignore any attribute information incorporated into data records. Such records should be parsed by the user outside of Veera into a more conventional format prior to use.
- Write files which imbed any needed schema information into file itself.

Jobs in the Workspace

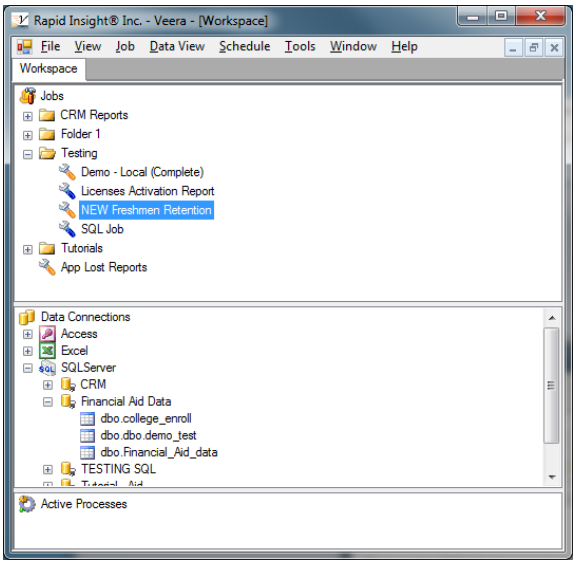
JOBS OVERVIEW

Jobs are projects, created by users, that gather data from one or more data sources (Data Connections), manipulate that data with various tools (known as Tasks), format that data using several reporting styles (known as Reports) and produce one or more outputs in the form of files or reports (each known as a Runable).

The Jobs section of the Workspace tab is where all jobs created or imported into in Veera are managed. From here, users can import, export, copy, rename, organize, schedule and delete jobs. For an explanation on how to build a new job or edit an existing one, see the section "JOBS IN VEERA".

HOW JOBS ARE ORGANIZED

Jobs can be easily organized by placing them in folders and sub-folders. Folders are created by right-clicking anywhere in the Jobs section and selecting "New Folder". Folders and the jobs they contain are ordered alphabetically. Jobs can be dragged and dropped between folders.



JOB DETAILS SECTION

The Job Details section reports the properties of the current (or most recent) job selected from the Workspace Jobs list. Details include:

- Job Name
- Create Date
- Last Modified
- Last Used
- # of Nodes
- # of Input Nodes
- # of Output Nodes
- Connections
- Notes

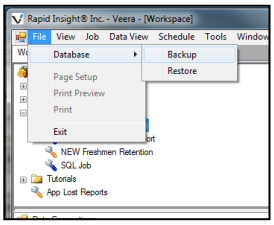
By clicking the appropriate control, this section may be hidden (>>) or viewed (<<) at any time.

Active Processes

The Active Processes section of the Organizational Workspace displays the names and elapsed times of jobs currently running in Veera. If no jobs are running, this portion of the Workspace remains blank.

Backing Up The Workspace

The content and structure of the Workspace may be backed up and restored to guard against catastrophic loss and corruption or to allow users of Veera to share their content. Open the File > Database menu from the main program toolbar. Veera automatically performs a backup when the program is updated.



Note that individual jobs may be exported and imported without having to resort to backing up and restoring the whole program content.

JOB TAB

The Job Tab in Veera is where users can build, edit, and view a job. Each tab is divided into five sections - Connections, Tasks, Reports, Runables and the Job Workspace.

Connections

Jobs need data in order to work. Connections point to sources of data. In order for a job to use a set of data, a connection pointing to that data must appear in the Connections section of the Job tab. This can be done in one of two ways:

- A new connection may be created while on the Job tab (see ***Creating a Data Connection***), or
- An existing connection may be imported into the job's Connections section.

To use an existing connection, choose "Select Existing" from the menu that appears when

- Right-click anywhere in the job's Connections section
- Clicking the down arrow to the right of the Connections section label.

Once a data connection appears in a job's Connections section, specific file and table connection references may be added to it (see ***Selecting Tables for a Data Connection***). To use an existing connection, choose "Select Tables" from the menu that appears when

- Right-click anywhere in the job's Connections section
- Clicking the Connections section label dropdown.

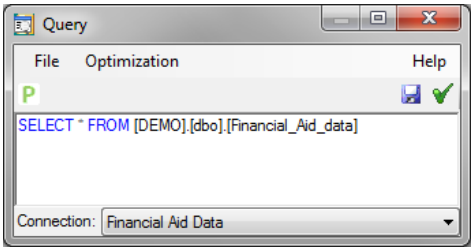
INPUT NODES ADDED TO JOBS

Input Node is a generic term used to refer to a data connection added (or about to be added) to a job. It appears as an ADD option when right-clicking on any table in the Connections section or under the NODE menu. When used, the selected table will be added to the current job.

Double-clicking on an Input Node allows the user to review the data structure (column names and data types) of the connection. Check boxes are also available that select or deselect specific columns from appearing at the node's output. Changes made to the data source structure since the last time the window was opened will be represented - removals will appear in red, new entries in blue. Saving and closing the window will incorporate the changes into the node.

QUERY NODES ADDED TO JOBS

A Query Node is a special form of connection. It can only be created from a database table connection by right-clicking on the table entry in the Connections field and selecting Add Query Node from the menu that appears. A Query Node icon representing that connection will appear in the Job Workspace.



Running SQL Scripts in Veera Using a Query Node

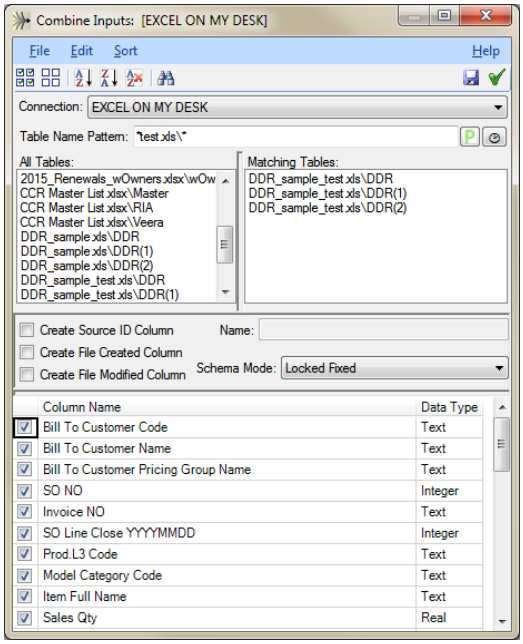
The Query Node setup window is different from that of other connections. Instead of displaying a list of available variables it presents a query window. The node will be tied to a database connection and it will have a default query if it was created from a table connection. The user may edit this script, using the syntax for the version of the SQL scripting language native to the database server being accessed.

In addition to SQL scripting, the Query Node can make use of user defined functions and stored procedures hosted on a database server, as long as the entire "query" expression returns a "result set" i.e. something that looks like a table.

COMBINE INPUTS NODES ADDED TO JOBS

A Combine Inputs node is a special data connection that appends the records of several co-located data files together and makes them available as if they were a single source. Once configured, it is integrated and used in jobs like any other Input node.

Right-click on a file-based Connection entry in the Connections field and select Add Combine Inputs Node from the menu that appears to add one to a job. Double click on the node to configure.



Select the files to be combined by entering some common portion of their names. Wildcard characters (*) may be needed to achieve this (such as College Enrollment Data FA*.csv). "Regex:" may also be used to specify groups of files to match when wildcards alone won't suffice. As an example, "Regex:CI-..\.xls.*\.*$" will match all Excel worksheets in workbooks that start with "CI-", are followed by 2 characters, and have a file extension that starts with "xls".

Checking the Create Source ID Column option box and entering a name will add a new column to the incoming data. The name of the source file for each record will appear in the field.

Checking either the Create File Created Column and/or Create File Modified Column option boxes will add new columns to the incoming data. They will be filled with the relevant file information for that data row.

Defining the Schema in the Combine Inputs Node

The schema of the first matching table will be used to define the data layout the Combine Input node presents to a job. In addition to opting in or out of certain fields using the individual column check boxes, users may select a schema mode to further control how this node behaves.

- FIXED will not adapt to changes to the list of columns. Discrepancies will be reported as errors.
- EXTENDABLE will automatically allow new data columns to appear in the output. Missing columns will be reported as errors.
- DYNAMIC will automatically alter the columns output to match the first table schema.
- LOCKED will always output the original columns list. Missing columns will populate with nulls.

EDI NODES ADDED TO JOBS

An EDI Node is a special form of connection. It can only be created from a data source that Veera interprets being formatted as an EDI (electronic data interchange) file. To make use of this node on such a data source, right-clicking on the file entry in the Connections field and selecting Add EDI Node from the menu that appears. An EDI Node icon representing that connection will appear in the Job Workspace.

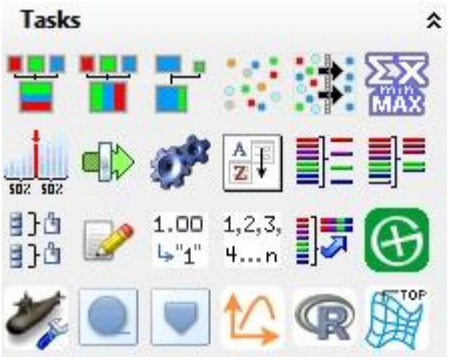
Tasks

OVERVIEW

Tasks are tools used from within a job to manipulate data. Veera provides 25 unique tasks that can be incorporated into any job. There is no limit to the number or types of tasks that can be used, though there are some restrictions on their order.

The 25 tasks are:

1. Append Tables
2. Merge Tables
3. Lookup Column Data
4. Get Sample Records
5. Filter Records
6. Aggregate Records
7. Median of Column Data
8. Cleanse Column Data
9. Transform Columns
10. Sort Records
11. DeDup Columns
12. Find Dup Records
13. Quantile Records
14. Rename/Exclude Columns
15. Convert Column Data Type
16. Rank Records
17. Transpose
18. Cache
19. Subroutine
20. Input Proxy
21. Output Proxy
22. Reduce Variables
23. R Project
24. Model
25. Share (under NODE > ADD TASK menu only)



Right-clicking on a task will open the Help Menu entry for that icon in a separate window.

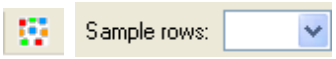
SETUP TOOLBARS

Tasks are configured once they are place in the Job tab's Working Area. Though the setup options of each task are unique, there are some controls that are common to most. These are typically found as one or more toolbars within the task's setup screen.

Find

The binoculars bring up a dialog box to search for a particular column if there are a number of entries.

Get Values



The Get Values control displays a list of every unique value found in the selected field. An associated Sample Rows drop down selects how many rows to search through to gather the sample:

Parameter

Parameters (i.e. named variables) are user-defined, specific to each job and configured under the Edit Parameters button of the Job Toolbar. The parameter button appears in association with many nodes and tools. It opens a List Box, allowing the user to select a pre-defined parameter to incorporate in a command or action.

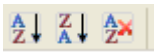
Reorder Columns

The up and down arrows move the selected column up or down in the display order. These controls also adjust the order in which certain dependent activities (like sorting) is done.

Save/Save and Exit

The Save button (blue disk icon) saves without closing the setup window. Save and Exit (green check) saves the completed work and closes the setup screen.

Sorting Options



The A-Z option sorts the data in ascending order. The Z-A option sorts the data in descending order. The AxZ option un-sorts the data, putting in its original order.

APPEND TABLES

Overview

Append “stacks” records from two or more sources to create one combined output. For example, if two datasets are appended, one containing 5,000 records and the other containing 10,000 records, the appended dataset will contain 15,000 records.

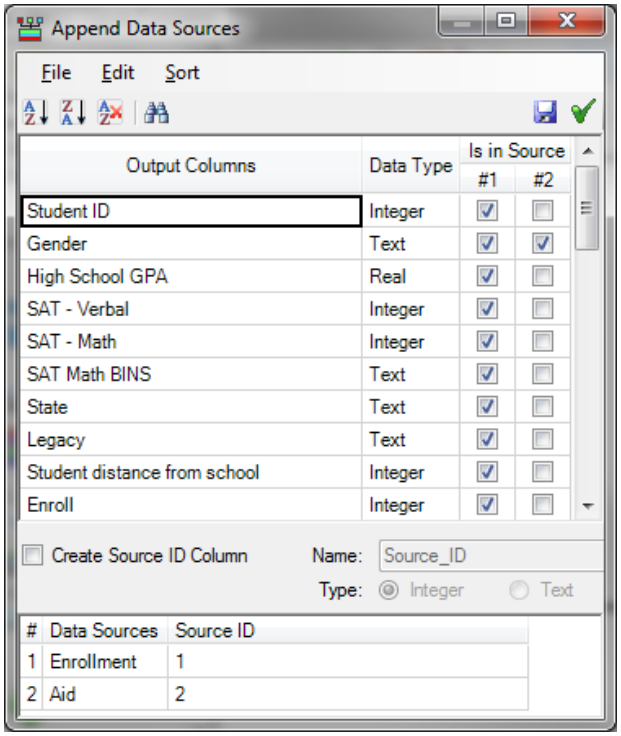
Rules For Appending Data

Append is intended to combine datasets with the same type of data (more-or-less) using the same columns/variables. This, however, is not mandatory. When column names of the data sources do not exactly match, the resulting output will contain each unique column.

Whether columns from several sources "line up" can be verified by reviewing the "Is in Source" checkboxes – if a box is checked, then that source's data will appear under that column in the Append output. The key to which source is which appears at the bottom of the screen.

Renaming Output Columns

In the example shown, the columns "Phone" and "Telephone" will both appear in the Append output as separate columns, even if the data contained in them is the same. Fortunately, users may rename columns in an Append. This allows data from two (or more) sources to end up in the same output column, even when their source column names are different. To rename a column, right-click a column name and choose 'Rename' or just double-click the column name, then type in the new name. Once entered, the Append will re-align with other fields of the same name. In the example, re-naming the column "Telephone" to "Phone" will keep the column "Telephone" from having to be created. The "Telephone" data coming from source #2 will now appear under the output column "Phone", along with the data from source #1.



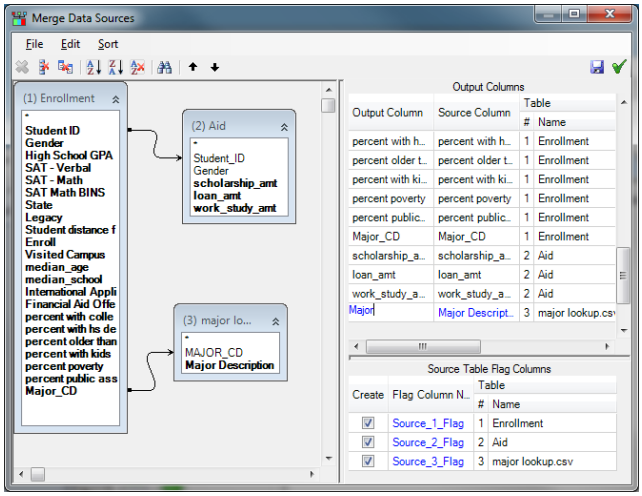
Creating a Source Id Column

Checking the box "Create Source ID Column" creates the new variable, "Source ID", in the output file. It stores a value indicating from which input the specific record came from. By default, the values will be integers from 1 to # (# of files being appended). The column name may be changed by entering a new one in the 'Name" field. To change the values used, double-click on one and type in a new value. If any value contains a character, the "Text" radio button should be selected.

MERGE TABLES

Overview

Merge is used to combine records from two or more related data sources together – making one record from several. Each data source entering the Merge is represented as a separate box in the working area, with the name of the source at the top and the list of its column names below.



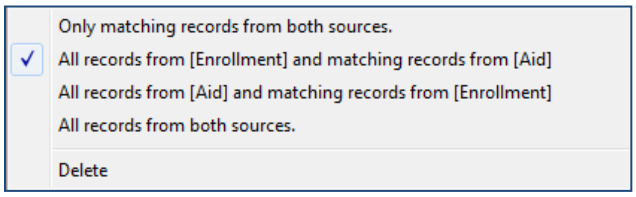
Joining Sources

The first step in a Merge is to join the data sources together. Though the mechanics of joining are straightforward, the right approach might not always be so clear. The user must consider how these data sets are related and what is the desired outcome. Identifying which field(s) will make a record unique in the output is often a good start.

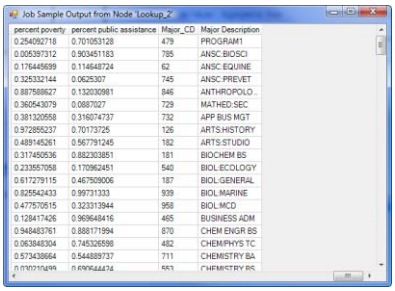
Dragging one or more columns from one data source and dropping them onto the matching columns of another data source forms joins between those columns. A line is drawn between the columns to represent the join. In the example shown, there are 2 joins between three data sources.

Join Types

There are four Merge Join types:


Only matching records from both sources.
All records from [Enrollment] and matching records from [Aid]
All records from [Aid] and matching records from [Enrollment]
All records from both sources.
Delete

- *"Only matching records from both sources"* (inner join). An output record is created only if records are found in both sources with matching data in the joining column. By default, the initial join is always of this type. It is depicted by a line with no arrowheads.
- "*All records from [data source 1] and matching records from [data source 2]"* (left join). One output record is created for each [data source 1] record paired with each matching record from [data source 2]. It is depicted by a line with an arrowhead pointing to [data source 2].

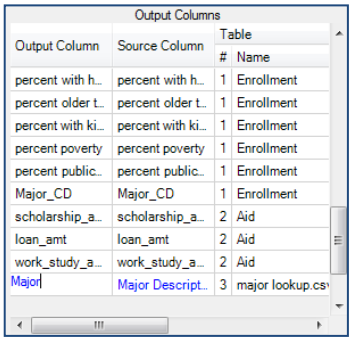


- *"All records from [data source 2] and matching records from [data source 1]"* (right join). One output record is created for each [data source 2] record paired with each matching record from [data source 1]. It is depicted by a line with an arrowhead pointing to [data source 1].
- "*All records from both sources*" (full outer join). Every unique combination of records from both sources will appear in the output. This is comparable to a union of both left and right joins.

To change the Join Type, right-click on the line joining the two data sources. The line turns blue and the Join Type dialog box appears. Select the type from the list.

Selecting the Outputs

Once all the joins are defined, the user must specify which columns from each source will appear in the output of the Merge. There are two options for selecting columns.

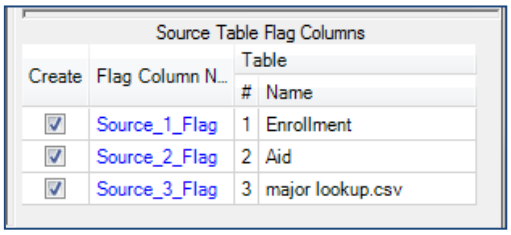

Output Columns
Output Column
Source Column
Table
Name
percent with h... percent with h... 1 Enrollment
percent older t... percent older t... 1 Enrollment
percent with ki... percent with ki... 1 Enrollment
percent poverty percent poverty 1 Enrollment
percent public... percent public... 1 Enrollment
Major_CD Major_CD 1 Enrollment
scholarship_a... scholarship_a... 2 Aid
loan_amt loan_amt 2 Aid
work_study_a... work_study_a... 2 Aid
Major Major Descript... 3 major lookup.cs

- Select the asterisk at the top of the data source. This brings ALL columns of that source over to the output.
- Individually double-click on each data source column

When a column is selected, it appears in bold type within the data source table. It also appears in the "Output Column" list on the right side of the screen, along with its source. Deleting a column from the "Output Column" list removes the column from the Merge output. This is done by right-clicking the entry and selecting delete or selecting the entry and pushing the DEL key.

The column may be renamed when it appears in the output. Enter the new name in the "Output Column" field.

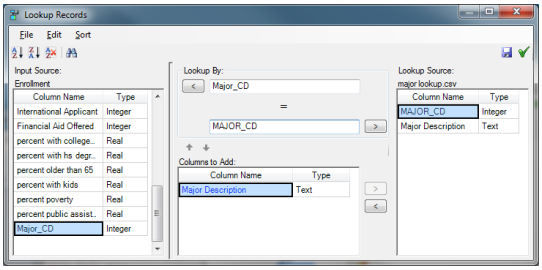
Creating a Source ID Column



Users have the option to create one new variable for every data source participating in the merge. These store a value to indicate whether that source contributed data to the record. Placing a check in the "Create" box beside the source creates the variable.

The indicator values will be 0 or 1. The column name may be changed by entering a new one in the 'Flag Column Name" field.

LOOKUP COLUMN DATA



Lookup Column provides a fast and efficient way to retrieve values from a lookup table. One data source will appear as the Input source and the second is the lookup source. In the example shown, the first source contains a code for "Major" and the second source contains the description being looked up.

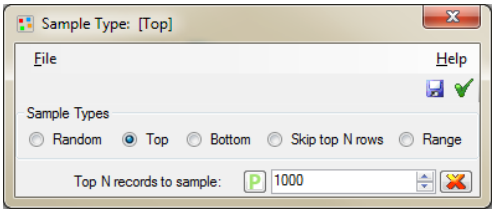
The user chooses the "Lookup By" column - in this case it's the 'Major_CD' field. It is joined to the 'MAJOR_CODE' in the "Lookup Source". The column to add to the output is the one containing the value looked up, above it's the 'Major Description' coming from the lookup source.

Lookup Column is limited to 10000 unique values in the Lookup By column

SAMPLE RECORDS

Sample Records outputs a subset of the data entering it. The user determines the number of records to be output (or skipped) and the method of their selection. There are five different sampling methods:

- Random
- Top
- Bottom
- Skip top N rows
- Range (From/To)



An integer parameter may be used in place of an explicit, number-of-records value.

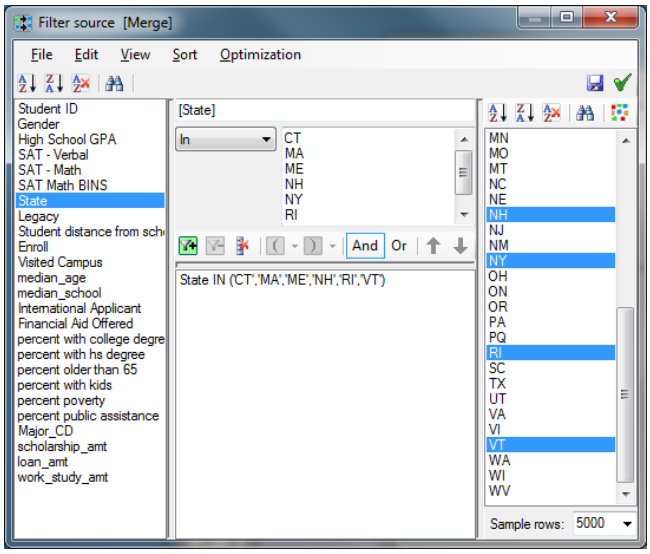
FILTER RECORDS

Overview

Filter is used to filter records based on one or more user-defined tests.

Defining a Test

Double-clicking on a column name from the list on the left selects it as the source of the data to test. In the example shown, "State" has been selected. Then the type of test is chosen from the following options:

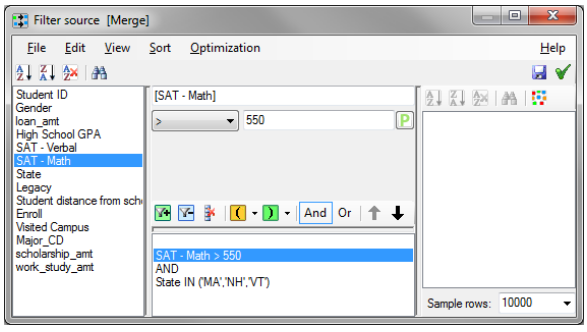


- In (specified list)
- Not In (specified list)
- Contains (found within column value)
- Does Not Contain (not found within column value)
- Starts With (the specified value)
- Ends With (the specified value)
- Like (matches a pattern)
- Equals (=)
- Not Equals (<>)
- Greater Than (>)
- Greater Than or Equal To (>=)
- Less Than (<)
- Less Than or Equal To (<=)
- Between (two specified values)
- Is Missing (no value exists)
- Is Not Missing (a value exists)
- EXPRESSION (offers range of DATE-specific operators that rely upon the computer system clock for reference, such as TODAY)

Next, the user must enter the data value(s) to test for. As an aid, a "Get Sample" button is provided, permitting the user to view unique values found in the column being tested. Values may be selected directly from this list (holding the Ctrl key allows multiple selections).

Creating Multiple Tests

Once a test is defined, it is added to the filter by clicking the Add Filter button (green funnel). It will then appear in the area just below the control. A corresponding SQL statement describing the test will also appear in the bottom-most box. An existing test may be removed from this area by highlighting it, then clicking the Delete Filter button (blue funnel).



Multiple tests may be combined to construct sophisticated filtering criteria. The following tools are provided to facilitate this.

Insert/Remove Parenthesis

Parentheses may be useful when combining several tests. The parentheses are used to group test criteria together so they can run together instead of separately. The parentheses can also be removed. Select each one, then use the arrow next to each parenthesis and choose the remove option.

And/Or Statements

Multiple tests may be joined together by adding AND or OR between them. To change one to the other, select the value then click the desired button to change it. Selecting the OR Otherwise, by default, tests are initially joined by AND

Move Up/Down

If there is more than one test, their order can be changed using this tool. Select the test and click the move up or move down arrow.

Delete All Filters

This deletes all of the test criteria from the filter.

Filtering Parameter

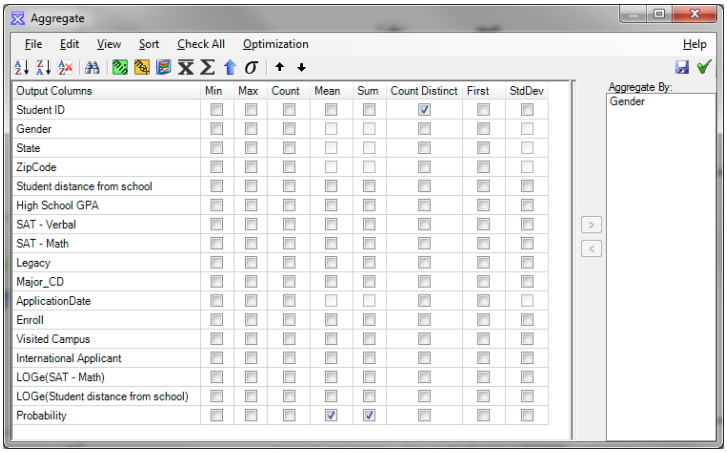
This button appears in conjunction with most filter operators. It opens a List Box, allowing the user to select a parameter to incorporate in a filter. Parameters (i.e. named variables) are user-defined, specific to each job and configured under the Edit Parameters button of the Job Toolbar.

AGGREGATE RECORDS

The Aggregate Records task allows the user to aggregate the data entering it. A single aggregate can be produced from the entire dataset which would produce one row of data.

Alternately, the user can choose to "Aggregate By" specific fields. One row of aggregated data will be produced for each unique combination of "Aggregate By" values.

The following may be calculated for those records matching the



unique “Aggregate By” combination:

- *Min* – minimum value found in that field
- *Max* – maximum value found in that field
- *Mean* – average of all non-null values for a numeric field
- *Count* – count of all non-null values for a field
- *Sum* – sum of all non-null values for a numeric field
- *Count Distinct* – count of the distinct # of values for a field (only one per aggregate)
- *First* –the first, non-null value encountered in that field
- StdDev – calculates the standard deviation of the numeric field

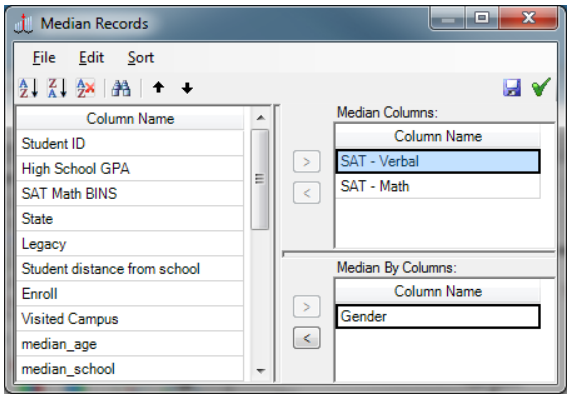
In the example shown, there is only one “Aggregate By” variable (“Gender”) and three aggregates selected, indicated by the checkmarks placed in the corresponding boxes. If “Gender” contains two values, “Male” and “Female”, the output from the Aggregate Node would consist of two rows and three new output columns - Probability_Mean, Probability_Sum and Student ID_Distinct

MEDIAN OF COLUMN DATA

Median creates a special aggregate of the source data. A column placed in the “Median Columns” list will be used to create a new variable that displays the median value of that column using all incoming records. The output data will consist only of these new variables.

Columns placed in the “Median By Columns” list will also apear in the output. Together, these columns determine how many records appear in the output. In effect, one data record will be output for each unique combination of values found in the columns listed in this section.

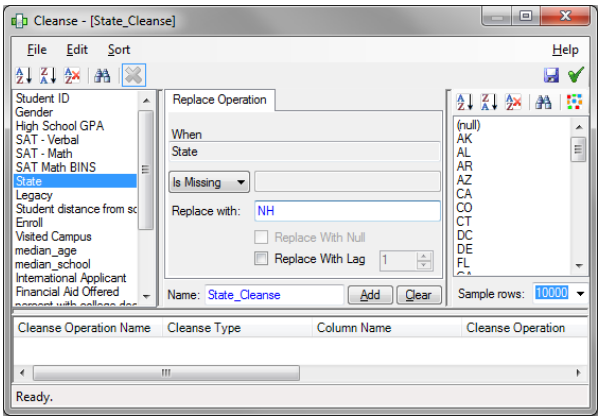
In the example shown, the two SAT scores are being aggregated to find their median values. Because these scores are being aggreagated by “Gender”, one record of median SAT scores will appear for each unique value of gender found in the incoming data.



CLEANSE COLUMN DATA

Overview

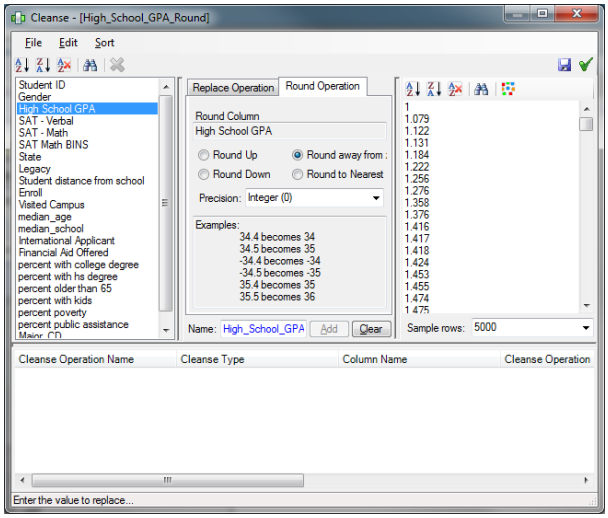
Cleanse Data is used when column data need to be replaced or rounded based on one or more user-defined tests.



Defining a Replacement Test

Clicking on a column name from the list on the left selects it as the source of the data to test. Then the type of test is chosen from the following options:

- Equals (=)
- Not Equals (<>)
- Greater Than (>)
- Greater Than or Equal To (>=)
- Less Than (<)
- Less Than or Equal To (<=)
- In (specified list)
- Not In (specified list)
- Contains (found within column value)
- Does Not Contain (not found within column value)
- Starts With (the specified value)
- Ends With (the specified value)
- Is Missing (no value exists; may be filled with the value of an earlier, lagging record)
- Always (always replace with the value of an earlier, lagging record)



Clicking on ADD will save the test and the intended action. When the conditions are met, Cleanse will overwrite the existing data with the new value.

Rounding Tests

When a numerical column is selected for evaluation, additional test options are made available. These include:

- Round Up
- Round Down
- Round away from zero
- Round to the Nearest (even)

In the second example shown, the column “High School GPA” was selected from the column on the left. A test was added to ‘Round Up’ the values encountered.

Multi-Select / Bulk Replacement or Rounding

If the same Cleanse action needs to be performed on several columns, hold the Ctrl button while clicking on the desired names. This will select multiple columns around which a test may be designed. Once added, a separate entry for each column will appeared in the list of Cleanse actions. Note that the Get Values button is disabled when multiple columns are selected and that all columns selected must be of the same data type (text, integer, real, etc).

TRANSFORM COLUMNS

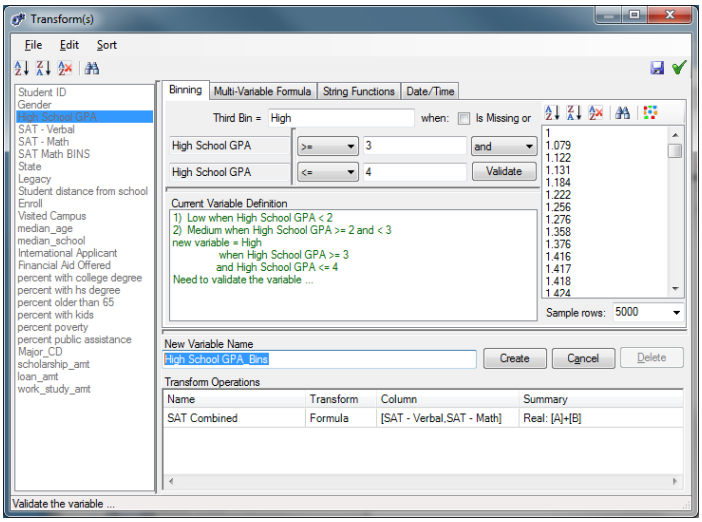
Overview

The Transform Node allows you to create new columns from existing columns. Once a Transform Node is connected to another node, it shows a list of all of the fields that exist in that node.

There are several options for different types of variables that can be created. Along the top of the Transform Window, there are four tabs (Binning, Multi-Variable Formula, String Functions, Date/Time).

Binning

The binning option allows users to create bins from another variable. To do this, first select the column that users want to create the bins with, on the left side. Next name the first bin/category. To do that, simply type in a name for that bin where it says 'First Category ='. Next, define the definition for that bin.



For example, perhaps users have a field containing SAT Math scores, and want to define 'low', 'medium', and 'high' bins. In that case, name the first category 'low'. Then define that category as (SAT Math <= 500).

Once defined, click the 'validate' button. Then name and define the next category.

Perhaps a user wants to name the next category as 'medium', and define it as SAT Math > 500 and SAT Math <=600. Click validate again, and define the next category. Once all categories are defined, type the name of the new variable where it says 'New Variable Name'.

Finally, click the 'create variable' button. This new Transform now appears at the bottom of the window where it says 'Transform Operations'. The Transform can be edited at any time by clicking it, making any changes, and then clicking the 'update' button.

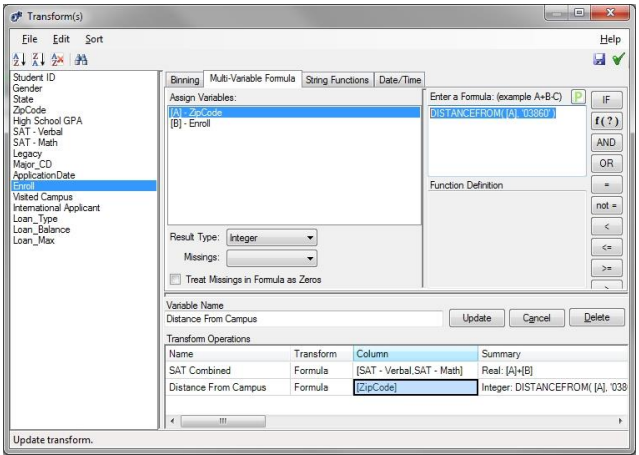
A good way to test whether the transform was created correctly, without having to run the entire job, is to save and exit the Transform Node, then right click the Transform Node and choose 'preview data'. By default, this runs the job using the first 1,000 records from any inputs, and shows the results, with the new variable as the last variable.

Note: If the variable being used to create the binned variable is a categorical variable like 'state', users can retrieve the unique values by clicking the 'get sample' button in the upper right corner. Users can then choose the 'in' operator, hold down the shift or control keys and choose any values to be placed into each bin.

Multi-Variable Formula

The contents of a new column can be derived from a single, solvable formula using one or more existing columns.

First, choose any columns to be used as variables in the formula. Veera assigns



formula tags to each of the chosen columns.

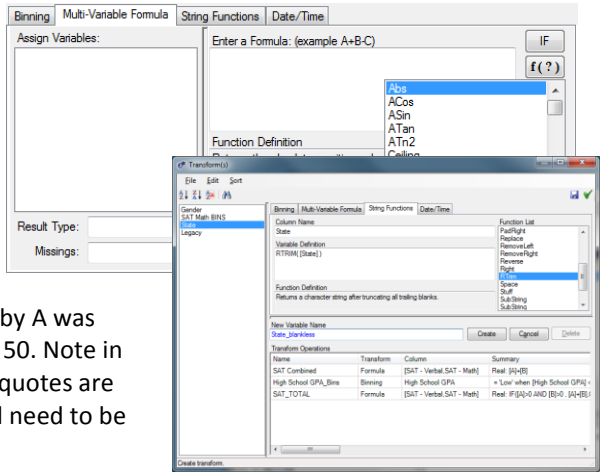
In the example shown, two columns are chosen to work with (SAT Verbal and SAT Math). A variable of A is assigned to SAT Verbal, and B is assigned to SAT Math.

In the formula box, any formula can be entered. In the example A+B is typed. This adds the two fields. Next choose a Result Type from the drop-down box. Then decide how to treat missing values both in the formula and in the results. Finally, name the new variable, and click Create.

IF Function

The IF function returns one value if a condition specified evaluates to TRUE, and another value if that condition evaluates to FALSE. The syntax for the IF function is: if(P1,P2,P3), where:

- P1 is the condition to test
- P2 is the value to return if the expression is true
- P3 is the value to return if the expression is false



As an example IF([A]>50,'high','low') would return the value of 'high' if the field represented by A was greater than 50, and 'low' if it is not greater than 50. Note in this case, since the output values are text, single quotes are put on 'high' and 'low', and the result type would need to be set to text.

Functions Operations

Clicking the f(?) button displays a list of functions. Clicking a function shows the definition and parameter requirements of the function. The function can either be manually entered into the formula box, or double clicked to automatically appear in the formula box.

MATCHESREGEX FUNCTION

MatchesRegEx is a function that takes a text column and returned a 1 when the text string matches the desired regular expression (RegEx). In effect, MatchesRegEx acts as a universal IS function, although users must develop the testing expression. Fortunately, searching the Internet for regex provides a wealth of examples. For example:

- This RegEx will only match a valid social security number (i.e. it won't match 000-00-0000):
  ^(?!000)([0-6]\d{2}|7([0-6]\d|7[012]))([-]?)(?!00)\d\d\3(?!0000)\d{4}$
- This RegEx will match currency (with or without cents, and optional $ sign):
  ^\$?\d+(\.(\d{2}))?$
- This RegEx will match positive integer: ^\d+$

Boolean Operations

Users can create Boolean (true/false or 0/1) variables. Choose the columns to work with, to assign variable tags. Type an expression and choose the output type of either Boolean which results in a true or a false output, or choose Binary, which results in 0 or 1 output.

Formula Parameter

This button appears above the formula field. It opens a List Box, allowing the user to incorporate one or more parameters into a formula. Parameters (i.e. named variables) are user-defined, specific to each job and configured under the Edit Parameters button of the Job Toolbar.

Validate Formula

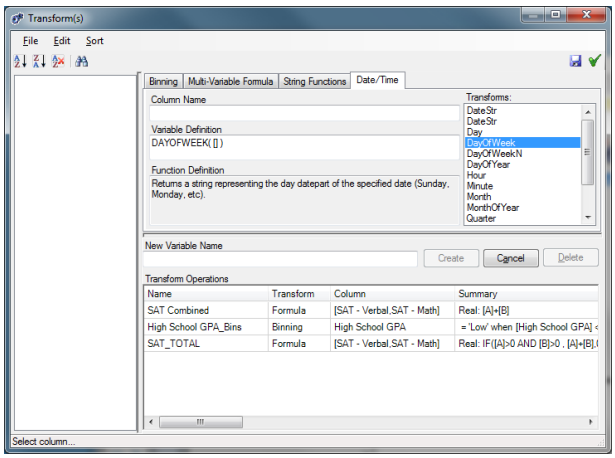
This button appears above the formula field. It checks the contents of the formula field for possible syntax issues. If a potential problem is detected, an Invalid Formula error is displayed. No message appears if the syntax is successfully validated.

String Functions

Only TEXT columns are available on the String Functions tab. Choose the text column to work with then fill in any parameters that are requested (the function definition as well as the parameter definitions are contained in the Function Definition box). Once the required parameters are filled in, name the new transform and click the Create button. If no text columns are found, the column list is blank.

Date/Time Functions

Only DATE/TIME columns are available on the Date/Time tab. Choose the date field to work with from the left. Next, fill in any parameters that are requested (the function definition as well as the parameter definitions are contained in the Function Definition box). Once the required parameters are filled in, name the new transform then click the Create button. If no date/time columns are found, the column list is blank



Editing a Transform Operation

Transforms can be edited at any time by clicking the transform at the bottom of the window. Once the edits are made, click the Update button to update the transform. A transform can also be removed by clicking the transform and clicking the Delete button.

Copying a Transform Operation

Formulas and bins may be copied by right-clicking the entry in the Transform Operation list at the bottom of the window and selecting Clone Transform. An identical copy of that operation will appear in the list.

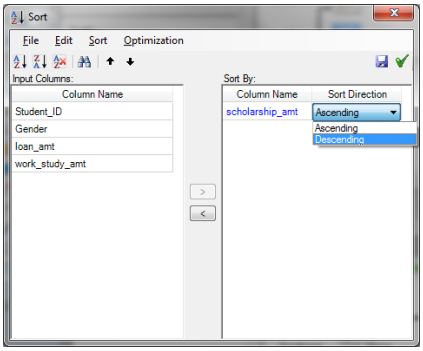
Exporting and Importing a Transform Operation

Formulas and bins may be exported by right-clicking the entry in the Transform Operation list at the bottom of the window and selecting Export Transform. The program will allow the operation to be saved as a *.ritd file.

Formulas and bins may also be imported by right-clicking the entry in the Transform Operation list at the bottom of the window and selecting Import Transform. The program will allow the user to select a saved *.ritd file and add its operation to the existing list.

SORT RECORDS

Sort reorders the records as specified by the user. The left column shows the Input columns. These are the available columns you can select to sort by. There may be many columns chosen to sort by.

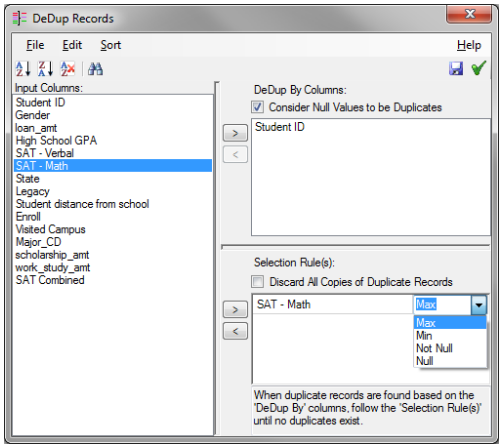


In the example, "State" was selected using the arrow and then appears in the Sort By: list. From there, select how it should be sorted - Ascending or Descending. If many columns are added to the Sort and the order needs to change, use the up and down arrows in the header to move in the proper order.

Note: The default sorting direction can be changed from the toolbar TOOLS > OPTIONS menu.

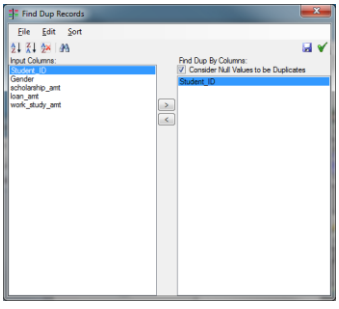
DEDUP RECORDS

Dedup identifies and removes duplicate records based upon criteria set up by the user. There are 3 elements in the DeDup Node:



- Input Columns: Input columns are the available columns coming from the node they were connected to. You can use these columns in the DeDup By Columns window or as a selection rule.
- DeDup By Columns: These are the column or columns that identify duplicate values. In the example below, duplicates are identified based on the same Student IDs. You may have multiple columns that identify duplicates, such as Last Name, First Name and Birth date.
- Selection Rules: These allow you to have control over which duplicate record continues towards the output. In the example below, the SAT – Math is being used as a Selection Rule. Therefore, if a duplicate Student ID is found, it takes the record with the Max SAT – Math score. Other options are Min, Not Null and Null. Any values in the Input Columns may be used in the Selection Rules. Applying the Discard All option removes each and every copy of a record that has duplicates.

FIND DUP RECORDS



Find Dup is used to find duplicate records that may exist in a data source and output these records.

All of the input columns will appear on the left hand side. The user can then select one or more columns to find duplicates by. One can then connect an output node to this to receive all of the duplicate

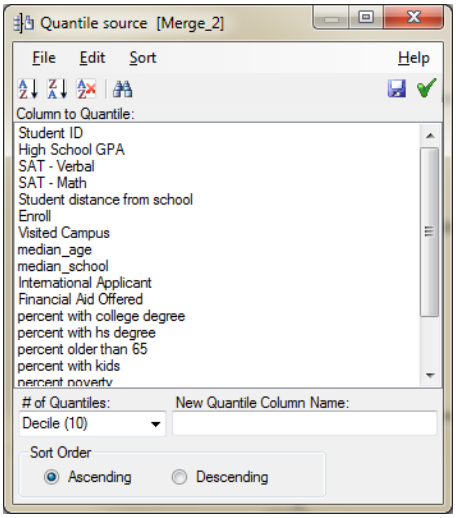
records. In order to get just a list of those duplicate records, the user may wish to add a dedup node right after the find duplicate to see a list of those IDs or names that are considered duplicates.

QUANTILE RECORDS

The Quantile Node creates a new quantile variable that indicates a record's relative location compared to the other records values in that column.

The quantile is created by ranking the data based on the chosen field, and then splitting into N equal groups. To create a quantile, choose the variable that you want to base the quantiles on, choose the quantile type, and name the variable (or leave it as the default name).

For example, a decile creates 10 groups. It creates entries based on a GPA variable, so a record with a decile value of 9, means that 90 percent of the GPA values in the data fall below the value for that record. Another option is to create quartiles, which rank the data and split the records into 4 groups. In this case, if a record is in the 4th quartile, that record is higher than ¾ of the other records (higher than 75%). If a record is in the second quartile, that record is higher than 25% of the other records. Below is a list of all of the default quantile options:

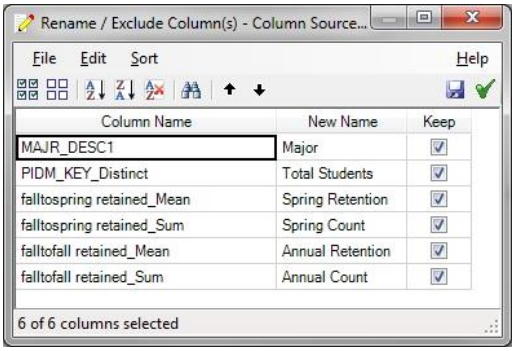


- Quartile (4)
- Quintile (5)
- Nonile (9)
- Decile (10)
- Duo-decile (12)
- Vingtile (20)
- Percentile (100)

Custom quantiles may also be entered in the # of Quantiles field. Quantiles may be assigned in ascending or descending order.

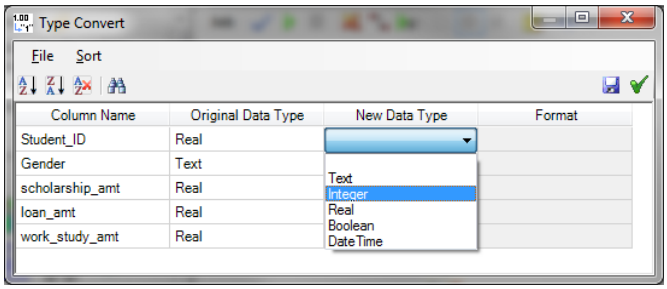
RENAME/EXCLUDE COLUMNS

The Rename Node changes the names of columns or excludes them completely from appearing on the output. The new names appear in any node that is connected after the rename node. When the rename node is first opened, a list of all of the fields appears. To rename a field, type the new name in the 'New Name' column, directly to the right of the old name. To exclude a column, uncheck the corresponding KEEP box.



CONVERT COLUMN DATA TYPE

Convert Column Data type is used to easily change column data types. For example, when attempting to merge two disparate data sources that have the same information but are of different data types – like INTEGER and TEXT. Also used when need to append information of the same content, but different type.



All of the input columns are listed followed by their Original Data Type. These are read-only fields.

The New Data Type has the following options:

- Text
- Integer
- Real
- Boolean
- Date
- Time
- DateTime

Designating the Format becomes possible if selecting a new data type of TEXT, DATE, TIME or DATETIME. Format options are:

- Scientific
- SSN; with and without dashes
- Phone #; various styles
- Currency
- Number
- Percent
- Date
- Time
- DateTime
- Integer
- Fixed 1-15: This allots the number of characters after a decimal point

DATE, TIME, and DATE/TIME provide a wide range of formatting options for column values.

All of the available formats appear in the drop down box. After you make your choices, select the green checkbox to save and exit from the node.

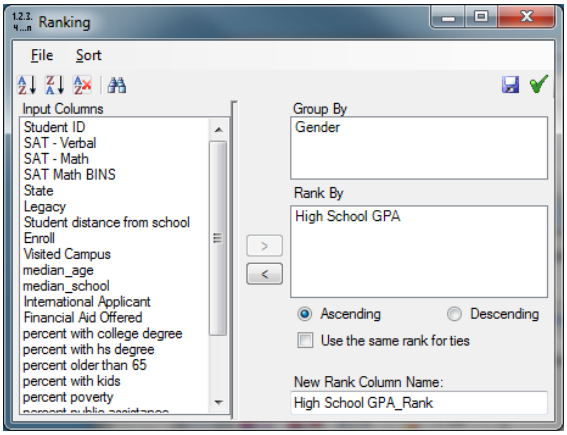
Multi-Select and Bulk Convert

If the same convert action needs to be performed on several, co-located columns, select a range of New Data Type fields using the mouse and the SHIFT key. Then select the new data type for the topmost entry in the highlighted list.

An additional option to convert all fields to text can be found under the window's Edit menu.

RANKING RECORDS

This task creates a new column and assigns a rank to each record based on ranking criteria.



Input Columns contain all of the columns coming from the previous node. You have the option of

selecting any of the input columns into Group By or Rank By.

Rank By is used to sort and rank. If no Group By is chosen, rankings are created for the entire population, or for every record based on the Rank By variable. Only one variable may be chosen to rank by. If values are null, they are excluded from the rank. If duplicate values exist, Veera ranks them all based on the first one it comes to.
Rank order is set to either Ascending or Descending. New Rank Column Name displays the new column name. The optional Group By field orders the ranked values by the selected column(s) which should contain a limited number of unique values.

CREATE INDEX

If neither the Rank By nor Group By fields are populated, the task will rank records by their position in the dataset, starting with 1.

TRANSPOSE COLUMNS

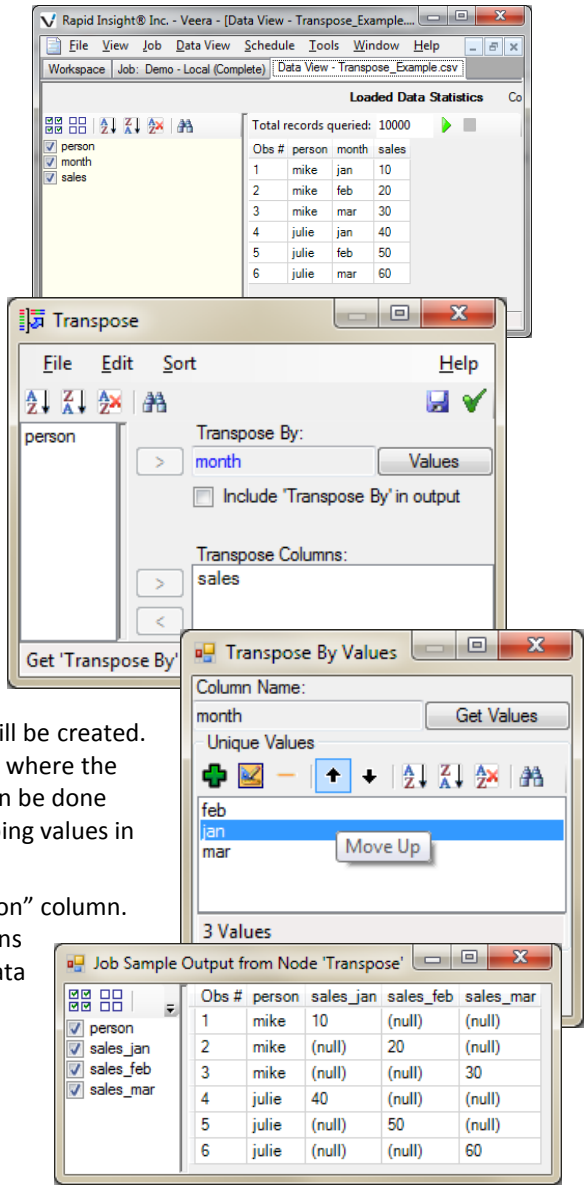
Transpose allows users to identify the unique entries found under a specific column and build one or more sets of new columns from them. All the data records are then reorganized to populate the new columns with the selected values.

As a simple example, take a dataset containing three columns: salespersons' names (person), sales months (month) and the number of sales made that month (sales). The dataset contains several records per person (each one reflecting a unque month and its sales figures).

Suppose it was preferable to have just one record per person. It would then be necessary to create a new column for each unique month (Jan, Feb, Mar) and store that month's sales number underneath it.

To do this, the column "month"is selected to be Transposed By and the data in column "sales" is selected to populate the new monthly columns that will be created. Clicking the Values button opens the Get Values utility where the unique values are defined. Identifying these values can be done automatically by clicking the Get Values button, by typing values in directly or a combination of both methods.

The resulting records still contain an unchanged "person" column. But in place of the original "month" and "sales" columns are three new columns that capture the transposed data ("sales_jan", "sales_feb", "sales_mar"). To flatten this dataset to just one record per person, an aggregate node will need to be used. Aggregate By the "person" column and select the First real value of each of the other columns.



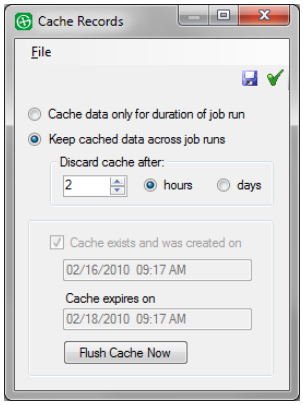
CACHE RECORDS

Cache is used to shorten processing time when running complex jobs with large data sources. When inserted in a job, all the data processed prior to and passing through a cache is saved. If the running job accesses data from this same point more than once, this saved data are used rather than processing through the earlier nodes again.

A Cache may be configured to retain data between job runs. When data is retained between job runs, the icon appears with a yellow cylinder superimposed in the upper right corner. Data will be retained in the Cache until the preset time expires or the Flush Cache Now button is clicked.

Splitting and Recombining Process Paths

A process that splits at a Cache may be recombined later in the same job using a node such as Merge or Append. This is a behavior unique to Cache – splitting a process at any other node and attempting to recombine it further on will produce an error or unpredictable results.

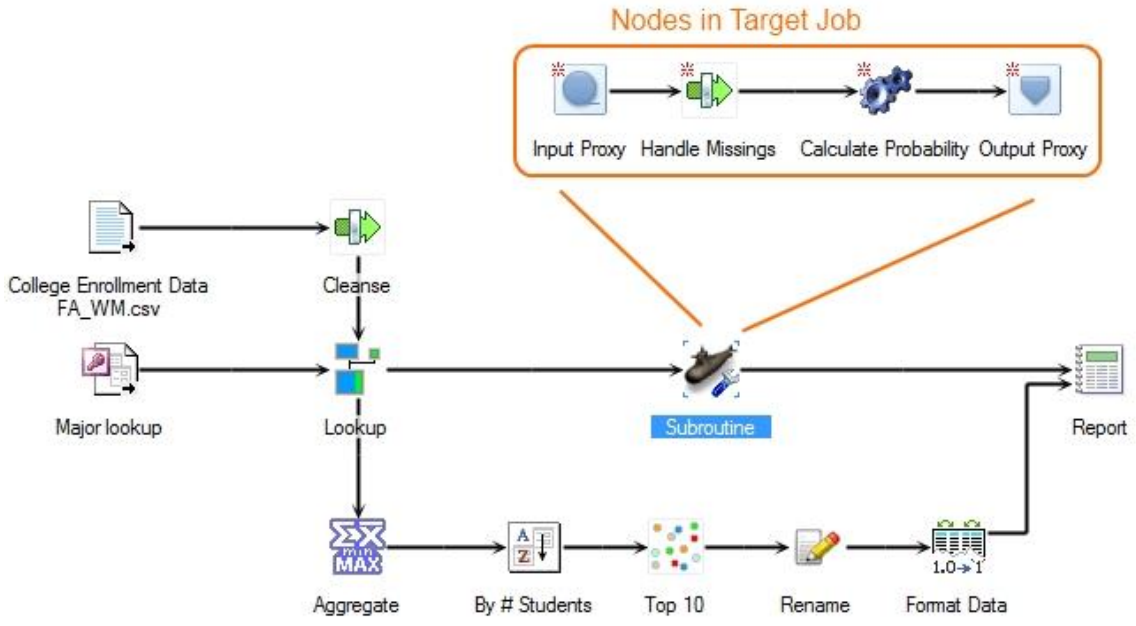


Viewing Cached Data

Caches allow users to directly view cached data by right-clicking the node and selecting View Data from the menu. This feature is the same as that found on Data Connections and Output Tables nodes.

SUBROUTINES OVERVIEW

Subroutines allow designers to make use of existing jobs from within a new process, shortening development and running times while opening a new range of processing possibilities.



An effective subroutine requires the following:

- A "base" job containing one or more SUBROUTINE nodes must be created. Each SUBROUTINE node is configured to send data to, and pass on data received from, a "target" job.

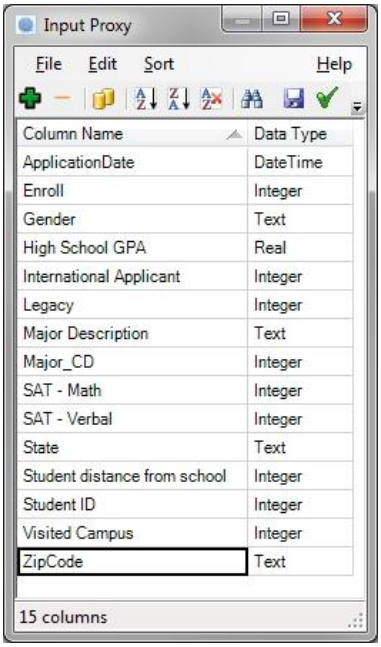
- One or more "target" jobs must be created. Such jobs are designed to be used only as part of a subroutine and not run on their own.
    - A target job may receive some or all of their data from a SUBROUTINE node through one or more INPUT PROXY nodes.
    - A target job must contain one (and only one) OUTPUT PROXY node. Data entering this node is passed back to a SUBROUTINE node.

The effect is as if all the nodes providing data to the OUTPUT PROXY in the "target" job were actually part of the "base" job at the point where the SUBROUTINE node is located.

INPUT PROXY

INPUT PROXY is a type of data connection node. It's the point where data is received from the SUBROUTINE node that originally caused the job to run.

- Multiple INPUT PROXY nodes may be added to a single job.
- Jobs with INPUT PROXY nodes may also include other data connections.
- This node may provide data to other nodes but cannot directly receive data.
- An INPUT PROXY may be configured either by converting an INPUT node or manually.
- Note that, regardless of setup method, any columns configured in the INPUT PROXY will be considered required.



Manually Configuring an Input Proxy Node

Double-clicking on an INPUT PROXY node placed in a job opens its setup window. Here, column names and data types may be directly typed into the columns provided.

Replacing an Input Node with an Input Proxy Node

Once an INPUT node is place in a job, it may be converted into an INPUT PROXY by right-clicking on the icon and selecting "Replace with Input Proxy Node" from the menu that appears. Double-clicking on a converted INPUT PROXY node opens its setup window. Here, the column names and data types found in the original INPUT node may be seen and, if desired, changed.

OUTPUT PROXY

An OUTPUT PROXY is a type of output node. It's the point where data is returned to the SUBROUTINE node that originally caused the job to run.

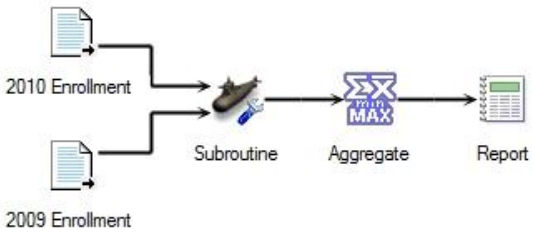
- Only one OUTPUT PROXY may be added per job.
- Data can enter this node from only one source.

- The OUTPUT PROXY need not be the only output from the job, though when called from a SUBROUTINE node, only the OUTPUT PROXY will be updated.

There are no configuration settings for this node.

SUBROUTINE

A SUBROUTINE node defines the location and the conditions for incorporating one job's process into another. The node itself acts as a matchmaker, marrying the individual data sources entering the SUBROUTINE node with specific INPUT PROXY nodes found in the called job. Once that called job finishes running, any data entering its OUTPUT PROXY node is then passed back to SUBROUTINE to continue on through the job. Unlike most nodes, SUBROUTINE can accept multiple streams of data as inputs.

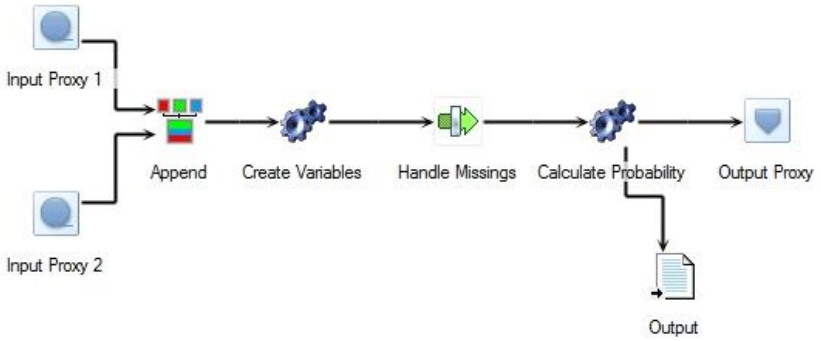


CONFIGURING A SUBROUTINE NODE

To configure, add the SUBROUTINE node to the job, then double-click on the icon to access its setup window. This window is divided into three sections.

JOB NAME Field

The Job Name drop-down is use to identify which job this SUBROUTINE will interact with. Clicking the control will open a view of the WORKSPACE > JOBS area from which the job can be selected.

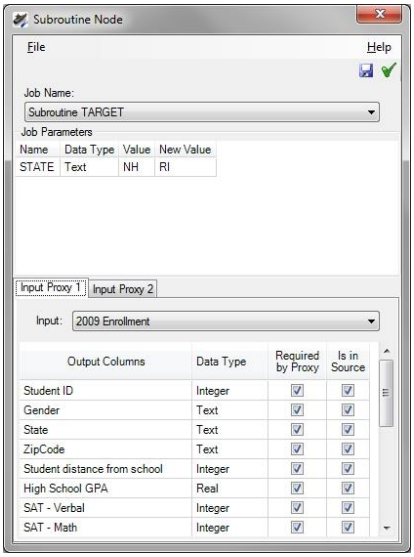


JOB PARAMETERS Fields

The selected job may or may not have parameters configured. If it does, the value of the parameter may be changed when the job is run by entering content in the New Value field.

INPUT Field

This section is where the associations between the streams of data entering the SUBROUTINE node, and the INPUT PROXY nodes found in the called job, are established. Each INPUT PROXY node will be represented by a tab. The user selects (using the Input field) which stream of data entering the SUBROUTINE node will be uniquely associated with which INPUT PROXY. When a selection is made, the grid below will list and compare (using check boxes) the variables found in



both the INPUT PROXY and the SUBROUTINE nodes. Excess columns coming from the SUBROUTINE are acceptable, but all fields found in the INPUT PROXY of the called job are required and must have a match in the SUBROUTINE.

REDUCE VARIABLES

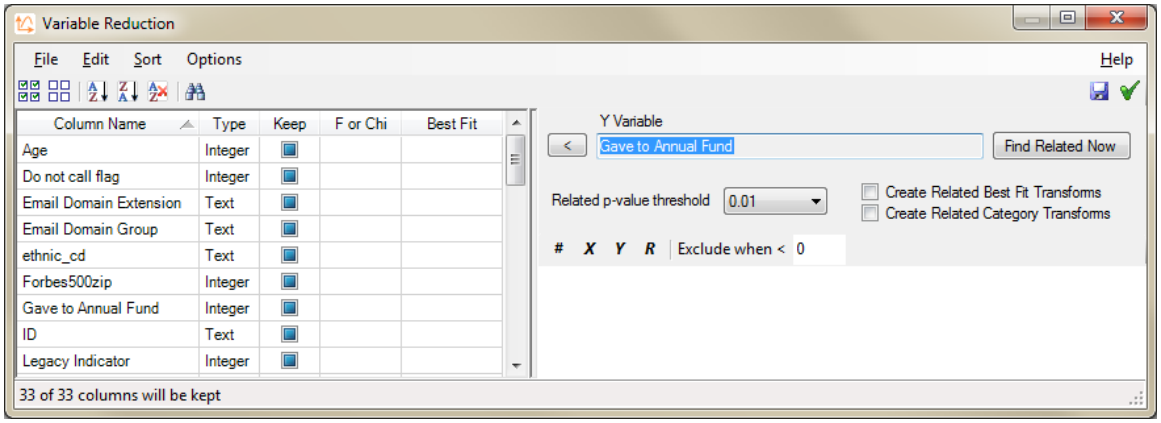
The Reduce Variables node is intended to facilitate the creation of a predictive modeling dataset for use in Veera's sister product, Analytics. It looks to identify those columns that statistically relate to a user-selected Y-variable and output them.

Y Variable Field

The Y Variable represents the one item that a predictive model is intended to predict. It can be any linear (real or integer) or binary (1 or 0) variable present in the list on the left-hand side of the setup screen. The arrow button to the left of the Y Variable field is clicked to loading the desired, highlighted column.

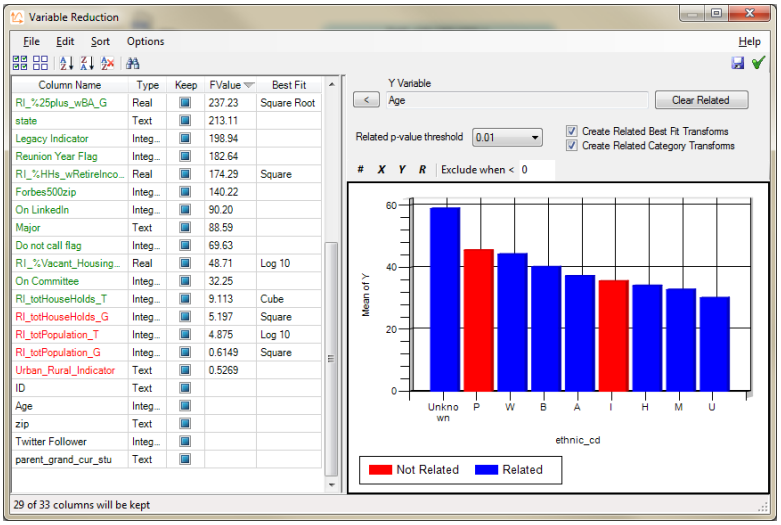
Setting Test Options

There is one main Variable Reduction configuration option affecting testing - P-Value threshold. This determines a minimum level on how confidence the program has in the variable's relatedness. The larger the p-value, the less confidence there is in the specific variable. The default is 0.01.


Variable Reduction
File Edit Sort Options Help
Column Name Type Keep F or Chi Best Fit
Age Integer
Do not call flag Integer
Email Domain Extension Text
Email Domain Group Text
ethnic_cd Text
Forbes500zip Integer
Gave to Annual Fund Integer
ID Text
Legacy Indicator Integer
Y Variable
Gave to Annual Fund
Find Related Now
Related p-value threshold 0.01
Create Related Best Fit Transforms
Create Related Category Transforms
X Y R Exclude when < 0
33 of 33 columns will be kept

Identifying Related Fields

When the Find Related Now button is clicked, the node will perform a series of statistical tests (Chi-Square, F-Test, etc) on the data in each column. In addition to the variable itself, several mathematical transformations of the original are also evaluated for relevance. These variations include square, square root, cube, cube root, log10 and natural log.



Those variables in the list that are sufficiently related to the selected Y Variable will be colored green, those related but not meeting the p-value threshold will be colored red and those not related will be colored black. Beside each variable is also listed its statistical test results and the transform providing the strongest statistical fit.

Output Options

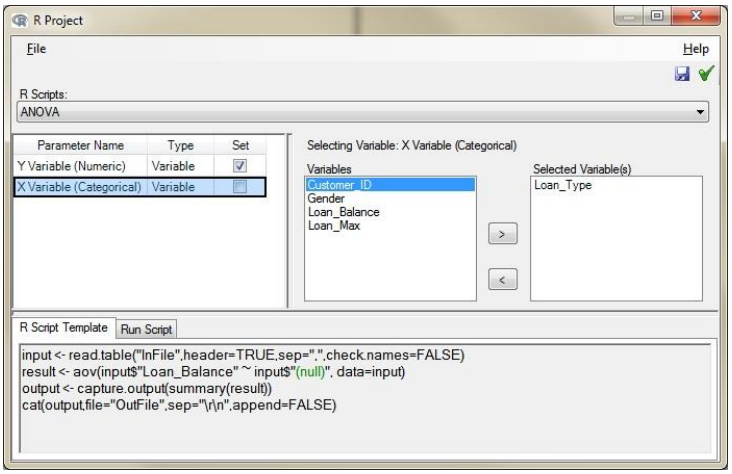
There are three main Variable Reduction configuration options:

- Keep Column. Columns marked in blue will be kept if relevant and left behind if not. This setting may be manually overridden to always keep (checked) or always discard (unchecked).
- Create Related Best Fit Transforms. Checking this option will direct Veera to create those transformed variables that were judged to be the best statistical fit.
- Create Related Category Transforms. Checking this option will direct Veera to create binary variables from those individual categories judged to be statistically relevant.

View Relationships Chart

Selecting a variable from the list will graphically display its relationship to the Y Variable.

R PROJECT



The R Project node provides a means of incorporating scripts from the popular open source statistical language R into Veera jobs. The node initially offers several pre-programmed scripts to pick from, though this list may be supplemented by the user.

The R Project screen is comprised of several sections. The R Scripts dropdown lists the available scripts to pick from. By editing the RScripts.config file located in the program folder, users may add new R scripts, modify existing ones or delete some altogether.

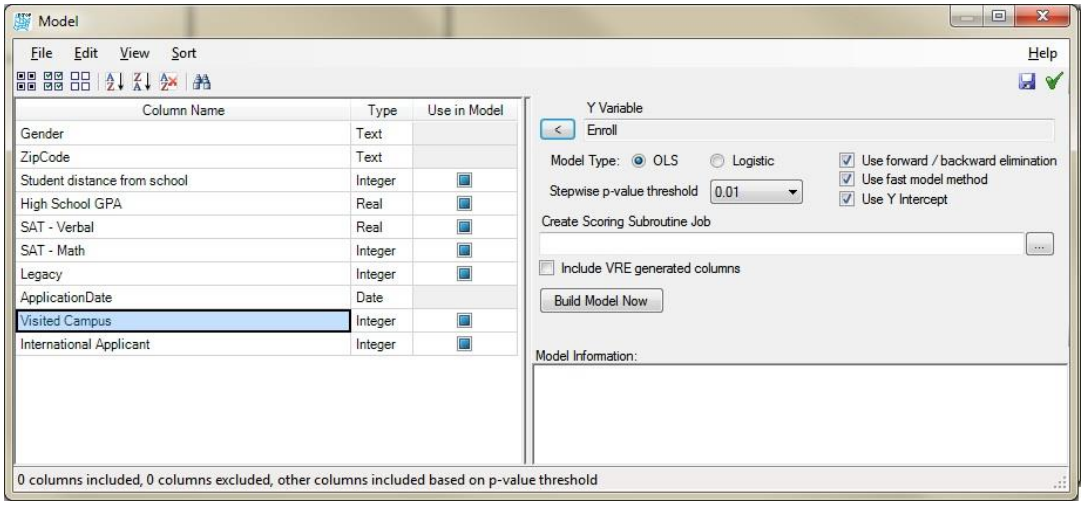
Once an R script is selected, the input parameters required by the script, along with their data types, are listed in the Parameter Name field. Users then select each listed parameter in turn and designate which of the available data columns will be used to satisfy its requirements.

The output of the R Project node is determined by the script it's running. This will either be a report based upon a single text-based column or a multi-column dataset.

MODEL

The Model node is used to perform the mathematical computations necessary to build a statistical model predicting behavior of a chosen, Y-variable. The model is a mathematical formula that is comprised of one or more of the other variables found in the dataset.

In order for the Model node to be used effectively, it must be preceded by a VRE node. . It's there that TEXT variables are evaluated for their model-worthiness and, when appropriate, broken apart and converted into categorical BINARY variables for use at the modeling stage..

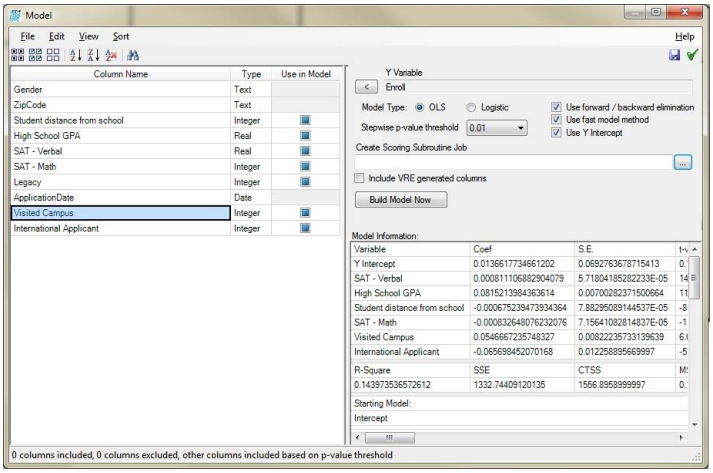


Model Types

By using the Model Types, users can customize their regression model. Logistic regression is used when the Y-variable is a binary. The resulting model looks to predict the likelihood of an event to take place. Ordinary Least Squares (OLS) Regression is used when the Y-variable is continuous. Users may select the Logistic regression method to model continuous variables, though this is not recommended. The resulting model looks to predict the rate or quantity of an event.

Include VRE Generated Columns Checkboxes

This option should be used when the Model node is preceded by a VRE node where related category and best fit transform variables were created. Then the new columns will be evaluated for their statistical impact on the chosen Y-variable and, when appropriate, they will appear in the model formula.



Build Model Now

The easiest and fastest way to build a model is by clicking the "Build Model Now" button. This option allows Veera to build what it feels is the best model that can be built on the current dataset. It takes all non-linearities in the data into account and makes all of the appropriate transformations on the candidate variables automatically.

MODEL INFORMATION

The "Model Information" window contains all of the variables available when building a model. It also displays the model's variable coefficients, standard errors, t-values, and p-values. All of the regression analysis steps taken to obtain the current model are also available by expanding the Model Steps section.

Share

A process that splits at a Share may be recombined later in the same job using a node such as Merge or Append. This is a behavior unique to the Share and Cache nodes – splitting a process at any other node and attempting to recombine it further on will produce an error or unpredictable results.

This node is available only from the Job Tabs Program Toolbar under the NODE > ADD TASK menu.

Reports

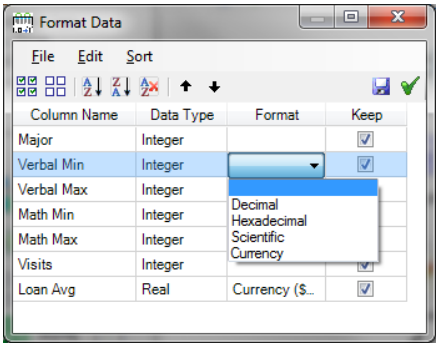
OVERVIEW

These are report formatting options designed to be used in conjunction with an Output Report runable to provide a particular look or style. Veera provides 6 unique report styles that can be incorporated into any job. There is no limit to the number or types of reports styles that can be used, though there are some restrictions on their order. The 6 report types/styles are:

1. Format Column Data (found only under the Node> Add Report menu)
2. Cross Tab Report
3. Frequency Report
4. Group By Report
5. Profile Report
6. Chart Data

Right-clicking on a report will open the Help Menu entry for that icon in a separate window.

FORMAT COLUMN DATA



Format Data is used to set specific formatting on fields for report outputs. Other options exist, such as those listed. The Keep column allows users to select which columns will or will not appear at the output of the node.

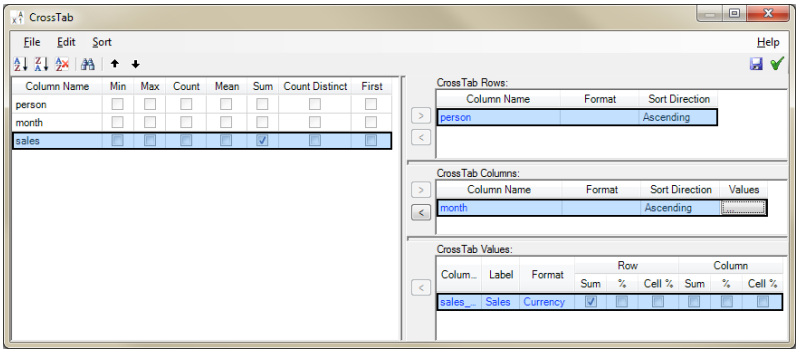
Regardless of their original column types, all data emerging

from this node are converted to type Text. Because of this, care should be taken when using the output of this task.

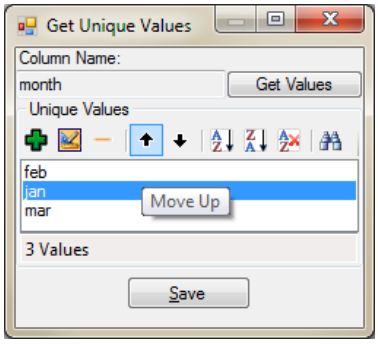
NOTE – Format appears only under Node> Add Report

CROSS TAB REPORT

Cross Tab reports create summaries (counts, means, sums) across two or more fields. They generate summary data in a grid where the rows and columns represent groups of data.



The user selects what the Cross Tab rows and columns will be. Clicking the ellipse button under the Values section of a Cross Tab Column will open the Get Unique Values utility. This is where unique values that organize and label the columns are defined. Identifying these values can be done automatically by clicking the Get Values button, by typing values in directly or a combination of both methods.

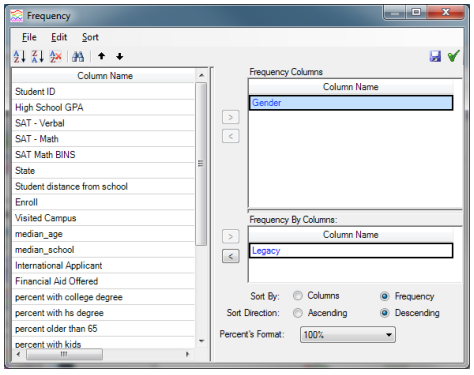


The Cross Tab values are populated using the checkboxes on the left hand side. Cross Tab Values may also include Row and Column Sum and Percentage (%), or Cell Percentages (%) by checking the relevant boxes. Cross Tab must output to a Report node in order for the headers to be seen. The column headers that appear will consist of all the entries found in the Input node, regardless of whether this data had been removed at some stage. Use the report's Remove Empty Column setup option to hide any unwanted columns.

NOTE - Regardless of their original column types, all data emerging from this node are converted to type Text. Because of this, care should be taken when using the output of this node.

FREQUENCY REPORT

Frequency Reports help to understand the counts of unique values represented in the data for any particular field. In the example below, the frequency is being determined by Gender. At the bottom right of the window, you can select the sort by and sort direction of the data. You can also choose the percent format.

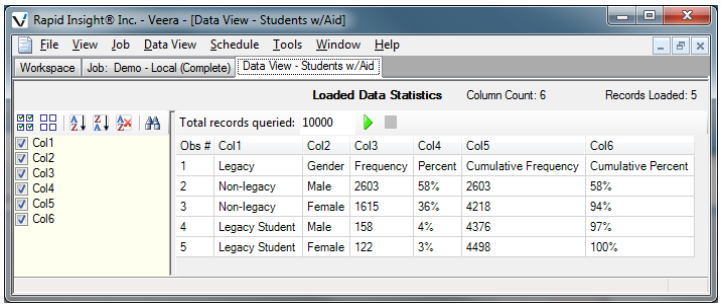


Running this to an output gives each unique value of gender, the number of times it was represented in the

data, the % it amounted to, as well as the cumulative frequency and percent.

Frequency must output to a Report node in order for the headers to be used – otherwise they will appear as a row of data.

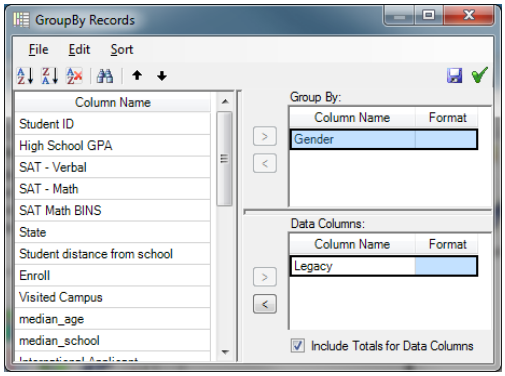
NOTE - Regardless of their original column types, all data emerging from this node are converted to type Text. Because of this, care should be taken when using the output of this task.


Rapid Insight® Inc. - Veera - [Data View - Students w/Aid]
File View Job Data View Schedule Tools Window Help
Workspace Job: Demo - Local (Complete) Data View - Students w/Aid
Loaded Data Statistics Column Count: 6 Records Loaded: 5
Total records queried: 10000
Col1 Col2 Col3 Col4 Col5 Col6
Obs # Col1 Col2 Col3 Col4 Col5 Col6
1 Legacy Gender Frequency Percent Cumulative Frequency Cumulative Percent
2 Non-legacy Male 2603 58% 2603 58%
3 Non-legacy Female 1615 36% 4218 94%
4 Legacy Student Male 158 4% 4376 97%
5 Legacy Student Female 122 3% 4498 100%

GROUPBY REPORT

GroupBy Report is used in designating how an output should be sorted and grouped and the associated column values formatted GroupBy must output to a Report node in order for the headers to be used – otherwise they will appear as a row of data.

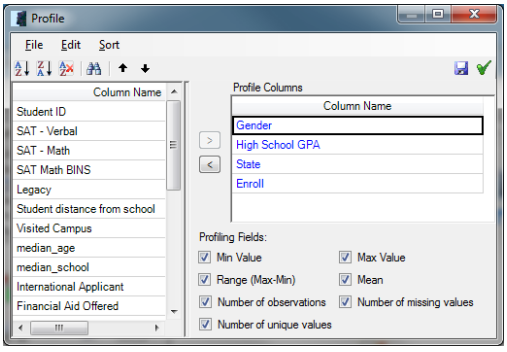
NOTE - Regardless of their original column types, all data emerging from this node are converted to type Text. Because of this, care should be taken when using the output of this task.



PROFILE REPORT

A Profile Report is used to summarize a column's basic statistics. The user may choose any column to profile. Select from the left side and double-click or use the arrow to identify the Profile columns. There are several options on how to profile the data. They include:

- Min Value
- Max Value
- Range (Max-Min)
- Mean
- Number of observations
- Number of missing values
- Number of unique values



All data unable to be calculated (due to variable type) will be left blank in the output.

Profile must output to a Report node in order for the headers to be used – otherwise they will appear as a row of data.

NOTE - Regardless of their original column types, all data emerging from this node are converted to type Text. Because of this, care should be taken when using the output of this task.

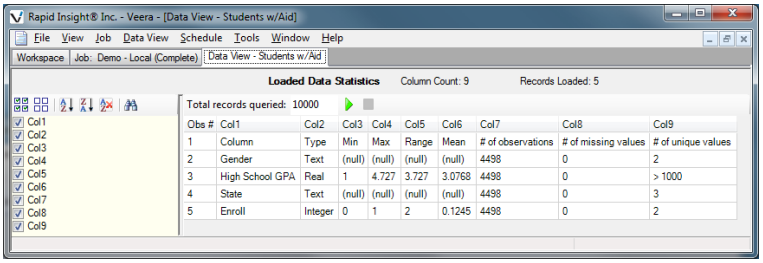

Rapid Insight® Inc. - Veera - [Data View - Students w/Aid]
File View Job Data View Schedule Tools Window Help
Workspace Job: Demo - Local (Complete) Data View - Students w/Aid
Loaded Data Statistics Column Count: 9 Records Loaded: 5
Total records queried: 10000
Obs # Col1 Col2 Col3 Col4 Col5 Col6 Col7 Col8 Col9
1 Column Type Min Max Range Mean # of observations # of missing values # of unique values
2 Gender Text (null) (null) (null) (null) 4498 0 2
3 High School GPA Real 1 4.727 3.727 3.0768 4498 0 > 1000
4 State Text (null) (null) (null) (null) 4498 0 3
5 Enroll Integer 0 1 2 0.1245 4498 0 2

CHART DATA

Overview

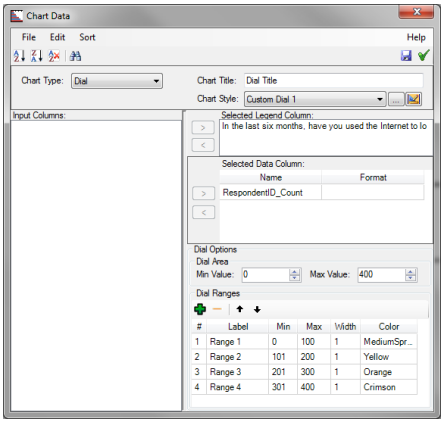
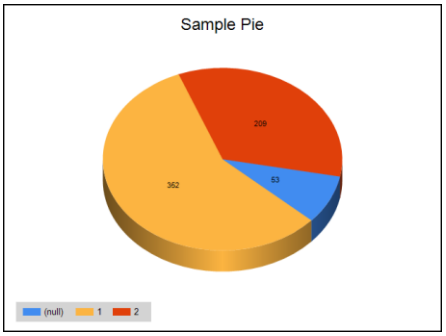


Chart Data
File Edit Sort Help
Chart Type: Dial
Chart Title: Dial Title
Chart Style: Custom Dial 1
Input Columns:
Selected Legend Column:
In the last six months, have you used the Internet to lo
Selected Data Column:
Name Format
RespondentID_Count
Dial Options
Dial Area
Min Value: 0 Max Value: 400
Dial Ranges
Label Min Max Width Color
1 Range 1 0 100 1 MediumSpr...
2 Range 2 101 200 1 Yellow
3 Range 3 201 300 1 Orange
4 Range 4 301 400 1 Crimson

The Chart Data task permits users to incorporate charts into reports - graphically depicting selected data. The node offers six charting types – Pie, Bar, Line, Column, Radar and Scatter. All charts (except Scatter) use a similar screen to select data for display. This screen is also where a chart's presentation style is selected from a list of available options. Chart styles are user-configured on the Chart Styles screen, accessed from the TOOLS menu.

Pie Chart

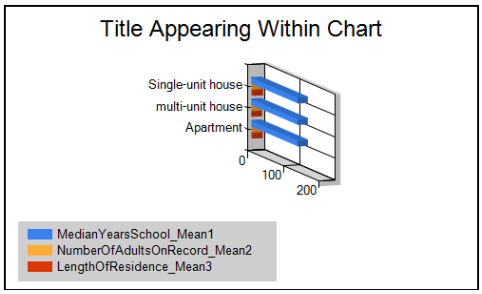
The number of slices appearing in a Pie chart is determined by the record count of the data entering the node. The slices are labeled with data found in the column selected to be the Selected Legend Column. Note that each data row must contain a unique value in this column, otherwise an error will result.



The size of each slice is determined by the values of data found in the column selected as the Selected Data Column. Note that only a single data column may be selected and that column must be numeric.

Bar Chart

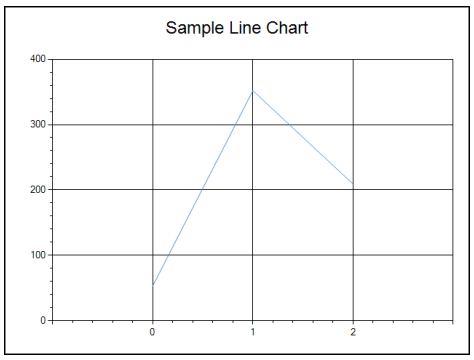
The number of sets of horizontal bars appearing in a Bar chart is determined by the record count of the data entering the node. Each set of bars is labeled using data found in the column selected to be the Y-Axis Label Column. Note that each data row must contain a unique value in this column, otherwise an error will result.



How many bars appear in each set is determined by the number of columns selected to be Selected Data Columns. The length or height of each bar is determined by the values of data found under these same Selected Data Columns. Note that the Selected Data Columns must be numeric.

Line Chart

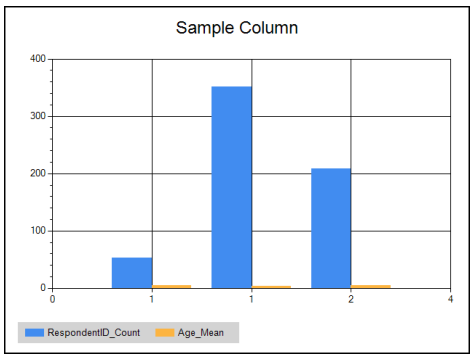
A Line chart is displayed as a grid. The horizontal X-axis is labeled with data found in the column selected to be the X-Axis Label Column. Note that each data row must contain a unique value in this column, otherwise an error will result.



The number of lines apearing in a Line chart is determined by the number of designated Selected Data Columns. The Y-axis of a Line chart grid is scaled automatically using all the values found in these same columns. Note that the Selected Data Columns must be numeric.

Column Chart

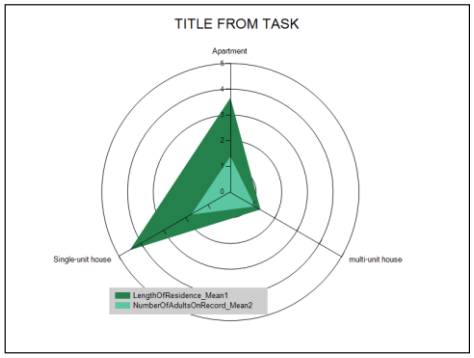
A Column chart is displayed as a grid. The horizontal X-axis is labeled with data found in the column selected to be the X-Axis Label Column. Note that each data row must contain a unique value in this column, otherwise an error will result.



The number of vertical columns appearing in a Column chart is determined by the number of designated Selected Data Columns. The Y-axis of a Line chart grid is scaled automatically using all the values found in these same columns. Note that the Selected Data Columns must be numeric.

Radar Chart

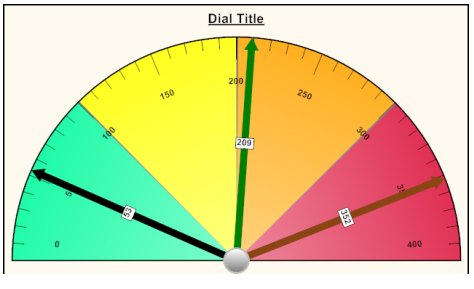
A Radar chart is displayed as a series of concentric rings. The outermost ring is labeled with data found in the column selected to be the X-Axis Label Column. Note that each data row must contain a unique value in this column, otherwise an error will result.



The number of areas appearing in a Radar chart is determined by the number of designated Selected Data Columns. A minimum of three is required with this chart type. The radius of each ring is scaled automatically using all the values found in these same columns. Note that the Selected Data Columns must be numeric.

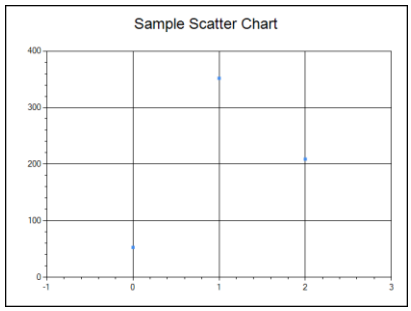
Dial Chart

A dial chart resembles an old-style automotive gas guage. The number of pointers appearing in the dial is determined by the number of designated Selected Data Columns. Note that the Selected Data Columns must be numeric and that each data row must contain a unique value in this column, otherwise an error will result.



The Dial Chart is unique in that areas of the dial may be colored differently to denote the importance of certain value ranges. These may be specified either in the chart style or in the node's setup window.

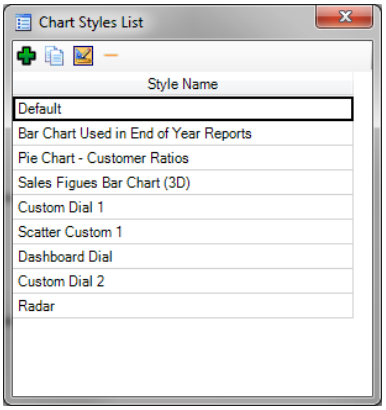
Scatter Chart



A Scatter chart resembles a Line chart in that it is displayed as a grid, with points representing data entries. Unlike a Line chart, there are no lines connecting these points. The horizontal X-axis is labeled with data found in the column selected to be the X-Axis Column. Note that each data row must contain a unique value in this column, otherwise an error will result.

The number of points appearing in a Scatter chart is determined by the number of Added Pairs. The Y-axis of a Line chart grid is scaled automatically using all the values found in these same columns. Note that the Selected Data Columns must be numeric.

Chart Styles



How a specific chart looks is dependent upon the chart style applied to it. Chart styles are selected for use with a specific chart using the Chart Style drop down control within a chart node's setup window. All user-created chart styles will be available for selection from this list as well as a Default style. Chart styles aren't necessarily associated with a single chart or chart type. Rather, a single chart style could be applied to a host of charts, each using a different type.

CHART STYLES LIST

Chart styles are managed from the Chart Styles List window. This window can be accessed from either the chart node itself or from the TOOLS > CHART STYLES menu. All chart styles appearing in this list may be selected for renaming, copying, editing or deletion. The name of a new chart style is assigned from this window before proceeding into the Chart Style designer window.

CHART STYLE EDITOR

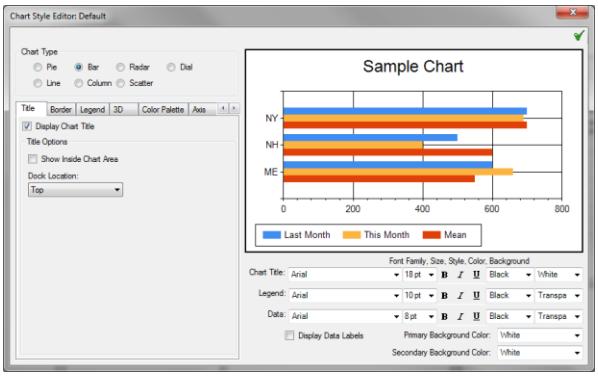


Chart styles are created and edited in the Chart Styles Editor window. This window can be accessed from either the chart node itself or from the Chart Styles list. The presentation options available on this window are primarily the same regardless of the chart type (bar, column, pie, etc) being styled. Attributes include titles, boarders, chart legends, data labels, color palettes, and display fonts. A 3-D rendering of charts (all except Radar) is also available. Each chart type also has one or more attributes tabs unique to its type.

SHARING CHART STYLES

Chart Styles may be developed and exported from one user then imported and used by another. To export a chart style as a .vcst file, right-click on its entry in the Chart Styles List, select Export and select the location where the file will be created. To import a .vcst file as a new chart style, right-click in any empty space in the Chart Styles List and select Import to load the new style into the system.

Runable

RUNABLE OVERVIEW

Runables are the finishing steps for jobs in Veera. They provide the point where the results of the process are saved, reported on and/or sent along to someone else. There are no limits to the number or types of runables that can be used in a job, though there are some restrictions on their order.

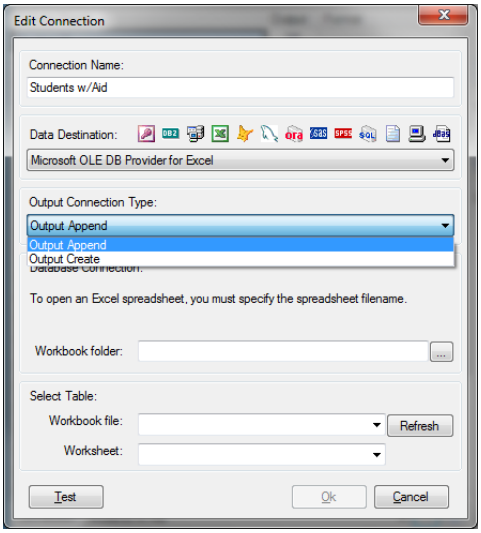
- Output Table
- Output Report
- FTP (get or put) File
- Command
- Compress or Uncompress Files
- Call (Another) Job
- Stop Job

Right-clicking on a runable will open the Help Menu entry for that icon in a separate window.

OUTPUT TABLE

Overview

The Output Table Runable provides the means of saving data to a file or table. Data can enter this node from only one source.



Configuring an Output Table Destination

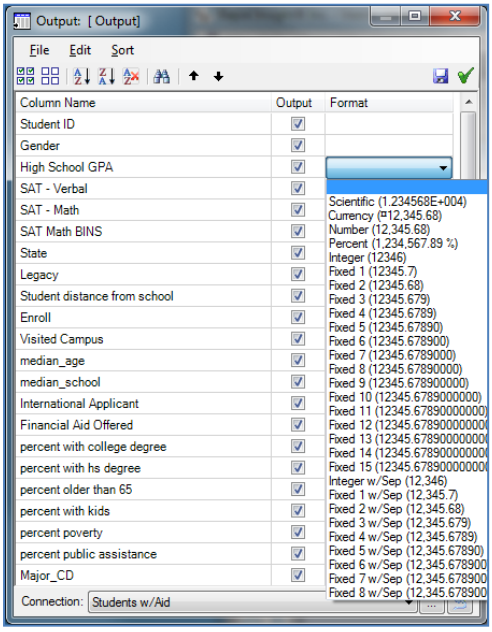
Once the Output Table setup window is opened:

- Enter a unique Connection Name.

  Select a Data Destination. The types of data destinations available for use are generally the same as those available as data sources (i.e. Connections). As with Data Connections, which data destination types are available is often dependent upon whether the drivers for that type are installed on the computer. ODBC, OLE DB and ADO.net drivers are freely available for download from many manufacturers. These can include:

  - Access
  - Excel
  - FoxPro
  - Oracle
  - SAS
  - SPSS
  - SQL Server

- Text/CSV
- UDL
- Vertica
- xBase
- XML



- Select an Output Connection Type
  - *Output Create.* This creates the output file or table. Note that this option may not be available or functional for every Destination Type. By default, Veera ships with the ability to create tables in databases like Oracle and SQL Server turned off. To enable, check Allow Create Table in Databases option under the toolbar TOOLS > OPTIONS menu window.
  - *Output Append.* Adds the data to an existing file or table rather than creating a new destination or overwriting any existing content.
- The dialog box changes to request the information unique to each type. This means either
  - Identifying the folder location, file name, etc., or
  - Identifying the database server location, database name and connection information

Once the information is populated, the Test button becomes active so the connection information entered can be checked. Once saved, an "Output" dialog box appears listing the columns in order.

- Columns can be excluded by un-checking the Output box
- Columns may be individually formatted under the Format column.

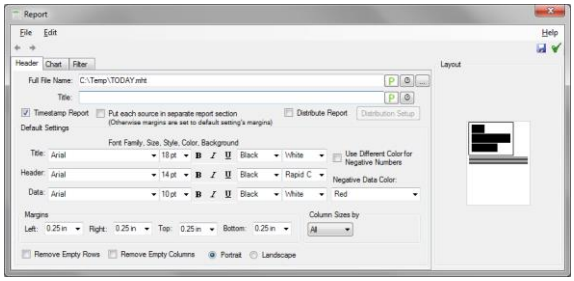
Passing Data Out of an Output Table

An Output Table can serve as an intermediate "save point" in a process. That is to say, connections can be made coming from an Output Table and passing data on to another node, continuing the process.

OUTPUT REPORT

Overview

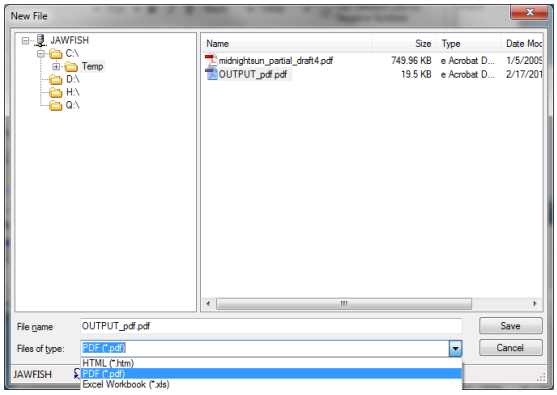
An Output Report Runable provides users with the opportunity to immediately report on the results of a job. Unlike the Table Runable, a single Report Runable will accept data from multiple sources, combining them into a single, multi-section report.



Configuring an Output Report

Once the Output Table setup window is opened, perform the following actions on the "Header" tab:

- *Enter a Full File Name*. By clicking on the Full File Name ellipse, a "New File" dialog box opens. What is entered here accomplishes three things:
  - Names the file where the report data will be stored
  - Names the location where the report data file will reside, and
  - Designates what the report type will be. Supported file types include PDF, HTML, MHT, Word, Excel, and Rich Text (rtf).



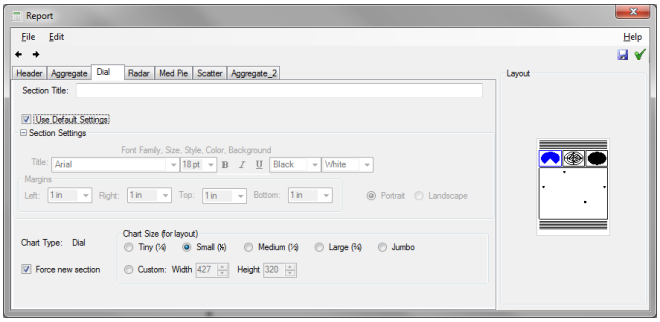
- *Enter a Title*. A title for the report can be added by selecting the 'Title' checkbox and typing a name to appear in the header.
- *Make other formatting choices affecting the main body of the report*. These include:
  - Adding a timestamp to the report
  - Section the report by data source
  - Formatting the Title, Header and report body ("Data") text
  - Document Margins
  - Presentation Style – Portrait or Landscape
  - Column and Row auto-sizing and removal of empty fields.

Adding Data Sources to Reports

For each connection made between a source of data and a Report node, a tab will appear in the Report node's setup window labeled with the data node's title. The order of these tabs will determine their presentation order in the report itself and can be changed by using the left and right Move Section arrows. The display order is also depicted in the Layout image appearing on the right side of the setup window. Opening a tab offers custom formatting options for the section. Though a Section Title can be added at any time, most options can only be edited and applied once the Use Default Settings box is unchecked.

Adding Charts to Reports

As with data sources, each connection made between a Chart node and a Report node will appear in the Report node's setup window as a tab labeled with the chart node's title. The order of these tabs will determine their presentation order in the report itself and can be changed by using the left and right Move Section arrows. The display order is also depicted in the Layout image appearing on the right side of the setup window.



Opening a tab offers custom formatting options for the specific chart. Some of these options, such as title font and section margins, can only be edited and applied once the Use Default Settings box is

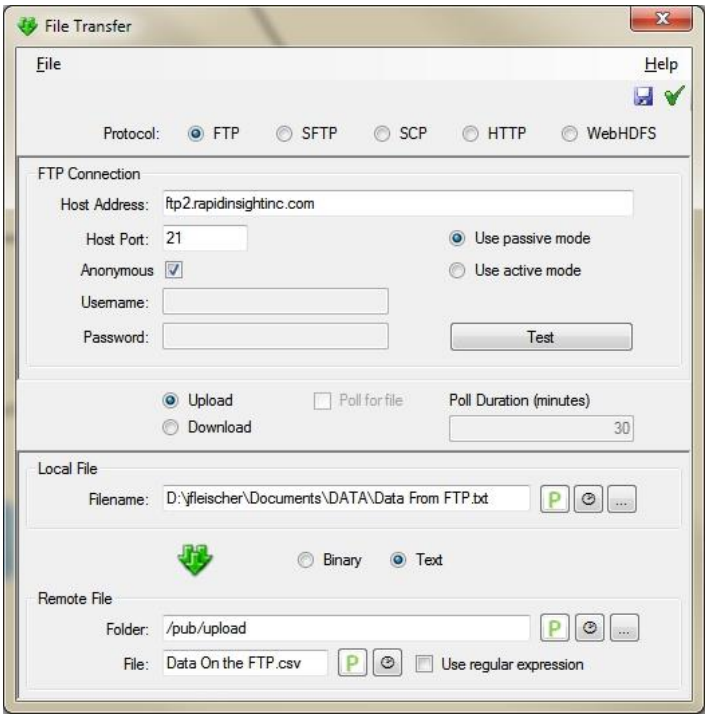
unchecked. Others, such as Section Title, can be entered at any time. Some of these options are unique to charts appearing in reports, with the effects of choices seen in the Layout depiction (the selected chart highlighted in blue):

- *Chart Size*. This governs the relative size of the graphic and how it will fit with other items in the report.
- *Force New Section*. This checkbox locates a chart to a new row in the report regardless of other spacing considerations.

FTP (GET OR PUT) FILE

The FTP Runable provides a connection between a Job and an FTP site. Data can be downloaded from or uploaded to the site, ostensibly for use in the Job. This can be done using one of five selectable protocols:

- FTP
- Secure FTP (SFTP)
- SCP
- HTTP
- WebHDFS (Hadoop)



In all cases, the user must fill in the appropriate host, port, and user information. The connection can then be tested (using the TEST button) to ensure everything functions properly. The remote and local file information will also need to be configured to specify the file names and locations.

As with all Runables, the "Set Run Order" Job Workspace Toolbar control is used to determine when the Command Node is run. Unlike most other nodes, connections are not made from or to it.

FTP Download

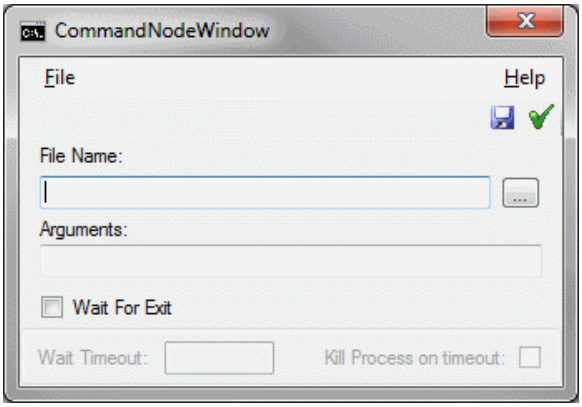
Select the "Download" radio button to have the Runable automatically download a specified file from the FTP site. In this way, any Data Connections pointing to an existing copy of that file could be assured to provide the latest copy of the dataset to the Job in which the FTP Runable appears.

FTP Upload

Similarly, selecting the "Upload" radio button directs the Runable to copy the specified data file to the FTP site.

COMMAND (EXECUTE EXTERNAL ENTITY)

The Command Runable is another unique Job tool. When placed in a job, this node opens/runs the file or program selected in the "File Name" field. If a file is selected, it opens the file in the program associated with it. If the program or file uses conditional arguments as part of its execution, these can be entered in the "Arguments" field.



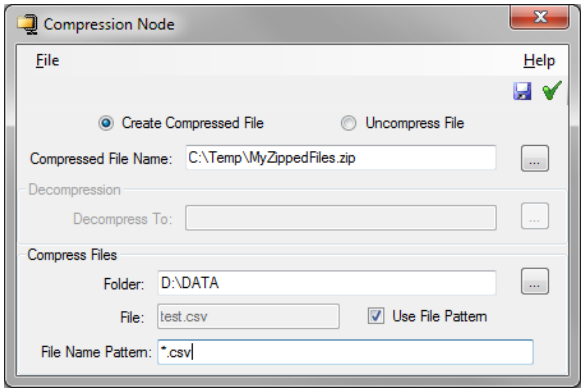
As with all Runables, the "Set Run Order" Job Workspace Toolbar control is used to determine when the Command Node is run.

If "Wait for Exit" is checked, the job will pause indefinitely until the external program that was opened is closed or until the number of seconds entered in the "Wait Timeout" field have passed. In the latter case, the external program will remain open unless the "Kill Process on timeout" box is checked.

Unlike all other nodes (except FTP, Call Job and Compress), no connections are made from or to it.

COMPRESS OR UNCOMPRESS FILES

The Compress/Uncompress Runable is another unique Job tool. When placed in a job, this node permits the compressing or uncompressing of files using the ZIP format.



As with all Runables, the "Set Run Order" Job Workspace Toolbar control is used to determine when the Command Node is run.

Unlike all other nodes (except FTP, Call Job and Command), no connections are made from or to it.

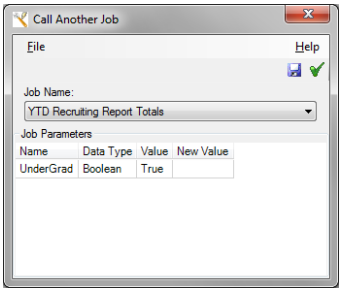
Uncompress Files

Select the Uncompress File radio button to configure the Runable to automatically uncompress the selected *.ZIP file (Compressed File Name) into the specified folder (Uncompress To).

Compress Files

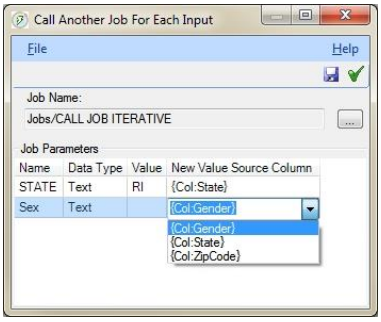
Select the Create Compressed File radio button to configure the Runable to select a single file (File) or set of files matching a pattern (File Name Pattern) and compress them into a single ZIP file (Compressed File Name).

CALL (ANOTHER) JOB



The Call Job Runable is another unique Job tool. This node passes new parameters to and runs another Veera job selected from the "Job Name" drop down list. Note that only the SAVED version of a selected job will run. As with all Runables, the "Set Run Order" Job Workspace Toolbar control is used to determine when the other job is run. Unlike all other nodes (except Command, FTP and Compress), no connections are made from or to it.

CALL (ANOTHER) JOB FOR EACH INPUT



Like the standard Call Job node, the Call Job for Each node runs another Veera job that has been selected using its "Job Name" drop down list. Unlike its sister node, the Call Job for Each is designed to run the target job multiple times - each time providing a different value for one or more of the target job's parameters.

This is done by connecting a data source to the node (also unlike Call Job) that serves as a "reference file". The user matches fields found in this reference file to parameters in the job being called.

The job called/run by the Call Job for Each node will be run once for each record found in the reference file. Each of these records will pass its values for the parameter(s) its fields were matched up with, potentially creating a unique result each time.

STOP JOB

The Stop Job runable is unlike any other node, in that it can be used either as an intermediate step within a job or as one of the job's endpoints. It provides a means of halting a job before completion by testing whether there are data records entering the node or not. Meeting the criteria selected for the test may stop just the part of the job that the node is a part of or the whole job.

DYNAMIC FILE NAMING

File Name Parameter

Several Runables allow for the incorporation of one or more parameters into the file name. Parameters (i.e. named variables) are user-defined, specific to each job and configured under the Edit Parameters button of the Job Toolbar.

To use, enter a file name in the field provided. Then, place the cursor at that position in the file name where the parameter value should appear. Finally, click the parameter icon to view and select from the available list. Once done, the file name will appear containing the name of the parameter selected.

When the job is run and the file is created, the parameter name is replaced with parameter's value.

File Name Timestamp

Several Runables allow for the incorporation of current date/time information into the name of the resulting file.

To use, enter a file name in the field provided. Then, place the cursor at that position in the file name where the date/time content should appear. Finally, click the Timestamp icon (beside the file name field) to view and select from the list of available date/time format options. Once done, the file name will appear containing code designating the format selected.

When the job is run and a file using a timestamp is created, the formatting code is replaced with entries corresponding to the date and/or time at the file's creation.

Custom Nodes (Add-Ins)

Add-Ins provide users with the opportunity to create their own, custom nodes. Developing Add-Ins requires a strong working knowledge of a .NET-compatible programming language such as C#. There are no restrictions.

Add-Ins are incorporated into Veera as supplemental DLL files, stored in the "C:\ProgramData\Rapid Insight Inc\Veera\AddIns" folder of the program. A sample Add-in DLL is included with Veera to serve as an example to would-be node developers.

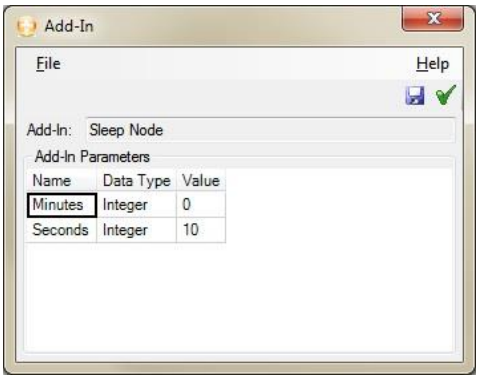
Add-In nodes won't appear along with the other, standard icons on a Job Tab. Rather, Add-Ins are accessed through the NODE > ADD ADD-IN menu. Selecting an entry from this menu will place the corresponding 32x32 pixel node image in the Job Workspace.

For further details on developing, integrating and using Add-In nodes, contact Rapid Insight Customer Support.

SLEEP ADD-IN

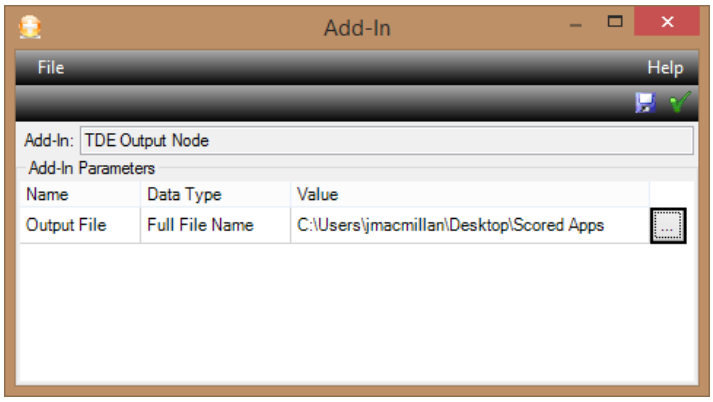
Sleep is an Add-In Node that allows user-defined delays to be incorporated into jobs.

Users enter the length of the delay (in minutes and seconds) in the setup window. Like other "special" nodes, Sleep does not connect to other nodes directly. Rather, it's participation in a job is managed through its run order, much like data outputs, FTP nodes, etc.



TDE OUTPUT ADD-IN

The TDE Output is an Add-In node. It allows Veera to store data in a proprietary file format called a Tableau Data Extract. This format facilitates the use of the resulting file as a data source for the wide-range of visualization programs offered by Tableau Software Inc. Configuration of the TDE Output is relatively simple. Users only need to specify the .tde file name and destination path.

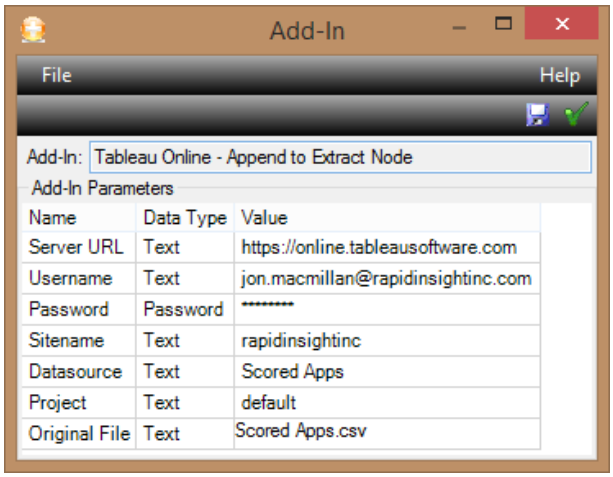


Like other output nodes, Veera nodes may feed data into it through a single connection, but it will not permit connections to be made out of it.

TABLEAU ONLINE – APPEND TO EXTRACT NODE

The Tableau Online – Append to Extract Node add-in node allows users the ability to update a data source automatically to Tableau Online. In order for this node to be used, there must already be an existing data source in your Tableau Online site. This output will append new records to an existing data source. If you would like to update/overwrite the existing data source use the Tableau Online – Refresh Extract Node.

NOTE: it is important that for this add-in to be used, the original file will have to be in csv format. Once all values are entered, this behaves just like any other runnable node.

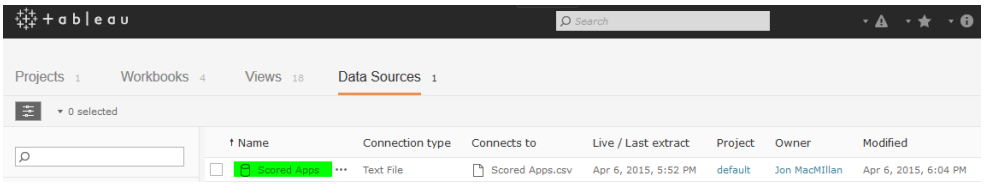


There are 7 required parameters for this node:

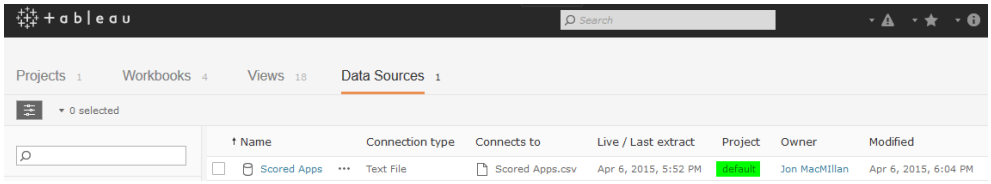
- **Server URL** – this is the destination site for the data source. This does not include your personal site name, but rather the Tableau Online site name and this value should already be entered and should not change.
- **Username –** the username that you use to access Tableau Online. This is generally an email.
- **Password –** the password that you use to access Tableau Online.

- **Sitename –** This is specific to your institution's online account. If you are unsure what your site name is, this can be found in the web address to tableau online:

- **Datasource** – The name of the data source as listed in your Tableau Online account. If you go to the Data Sources tab in Tableau Online this will be the value that is listed under Name.



- **Project** – the name of the project that the data source was originally published to. This is also available in the data source tab in Tableau Online



- **Original File –** The original source of the data extract. For this node to work the original data source has to be a csv file. The value entered into the node should contain the file extension '.csv'. If you are unsure of the original file this is also available in the data source tab in Tableau Online under the 'Connects to' field.

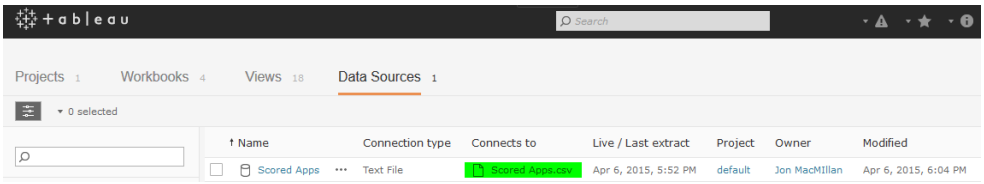
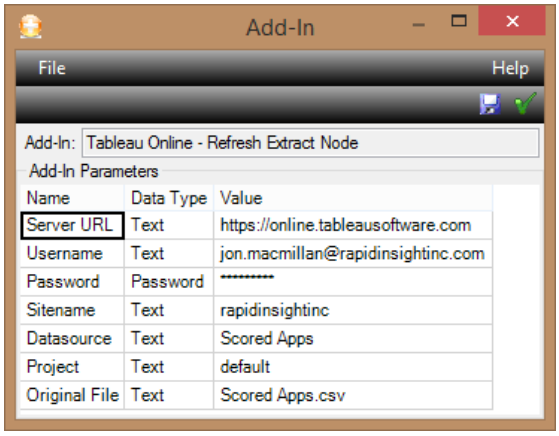


TABLEAU ONLINE – REFRESH EXTRACT NODE

The Tableau Online – Refresh Extract Node add-in node allows users the ability to update a data source automatically to Tableau Online. In order for this node to be used, there must already be an existing data source in your Tableau Online site. It is important to note that this output will update and overwrite the existing data source. If you would like to just append to the existing data source use the Tableau Online – Append Extract Node.

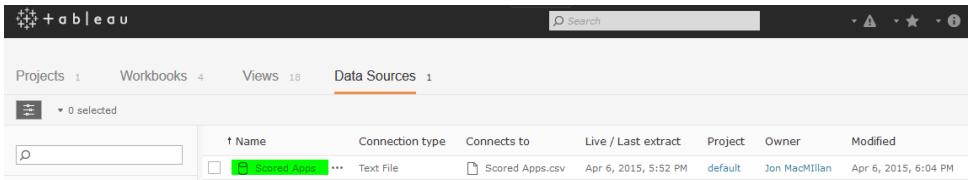
NOTE: it is important that for this add-in to be used, the original file will have to be in csv format. Once all values are entered, this behaves just like any other runnable node.

There are 7 required parameters for this node:

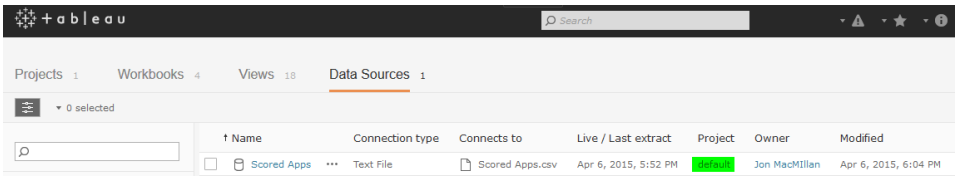

Add-In
File
Help
Add-In: Tableau Online - Refresh Extract Node
Add-In Parameters
Name | Data Type | Value
Server URL | Text | https://online.tableausoftware.com
Username | Text | jon.macmillan@rapidinsightinc.com
Password | Password | *********
Sitename | Text | rapidinsightinc
Datasource | Text | Scored Apps
Project | Text | default
Original File | Text | Scored Apps.csv

- **Server URL** – this is the destination site for the data source. This does not include your personal site name, but rather the Tableau Online site name and this value should already be entered and should not change.
- **Username –** the username that you use to access Tableau Online. This is generally an email.
- **Password –** the password that you use to access Tableau Online.
- **Sitename –** This is specific to your institution's online account. If you are unsure what your site name is, this can be found in the web address to tableau online:

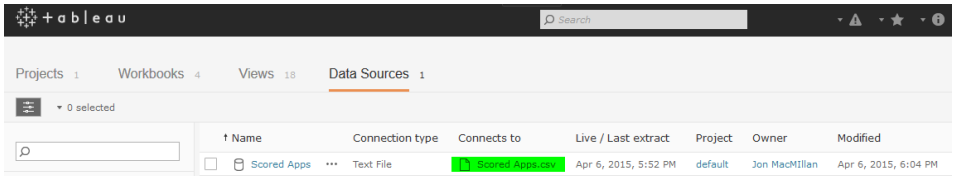
- **Datasource** – The name of the data source as listed in your Tableau Online account. If you go to the Data Sources tab in Tableau Online this will be the value that is listed under Name.



- **Project** – the name of the project that the data source was originally published to. This is also available in the data source tab in Tableau Online



- **Original File –** The original source of the data extract. For this node to work the original data source has to be a csv file. The value entered into the node should contain the file extension '.csv'. If you are unsure of the original file this is also available in the data source tab in Tableau Online under the 'Connects to' field.



Job Workspace

JOB WORKSPACE OVERVIEW

This is where Connection, Task, Report and Runable icons (called “nodes”) are copied, connected and configured to construct a Job in Veera.

JOB WORKSPACE TOOLBAR

A toolbar is located at the top of the Job Workspace. These controls provide a variety of tools and functions for use with the Job in view. The individual controls on the toolbar are described below.

Validate Job

Use this to check the job before running it. Reviews the job and alerts the user to any potential issues in the job. Veera highlights each issue with a yellow warning symbol above any nodes that are causing a problem. Placing the mouse over the warning displays a description of the error.

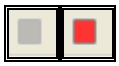
Run Job/Pause Job

Use this to run or pause a job. When the job is running, the button toggles to pause. Press the button at any point to halt the current status of the job.

Hide Job Status

This control hides the job progress bar.

Stop Job



Use this button to stop a job. The button becomes active (red) when a job is running. Press it to stop the running of a job at any point. Note that, under some conditions, a job will be waiting for an external driver to reply before it can respond to this control.

Delete Selected Item(s)

Use this button to delete any items that are selected in the Job Workspace.

Connect Nodes

Use this button to toggle on/off the ability to connect nodes together. Once on, select the source node, then the destination node. A line will connect the two. An arrowhead indicates data flow.

Set Run Order

Use this button in cases where there are multiple Runable outputs and the order of those outputs to run is important to specify. The order may be specified in one of two ways once this button is clicked. The first is to click all visible Runable nodes in the order they should be completed. The second is to arrange the Runables within the Rank Order List table.

Show/Hide Grid

Use this button to show or hide the grid in the Job Workspace. By default, the grid is hidden. To show the grid, press the button. When selected, the grid pattern appears in the Job Workspace. This is OFF by default.

Snap Moved Nodes to Grid

Use this button to force new or dragged nodes to fall onto the grid. This is ON by default.

Align All Nodes to Grid

Use this button to move all existing nodes onto the grid. This button is only functional when the Snapped Moved Nodes to Grid is off when nodes are dropped onto the Job Workspace.

Grow Workspace Area

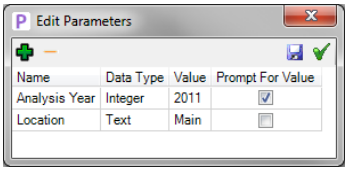
Use this button to expand the workspace area, navigated using scroll bars.

Edit Notes

Select a specific node then click this button to add a note to that node. A yellow note icon will appear in the corner of the node once saved. To add a node to the entire job, be sure that no node is selected (click into any clear space of the job) before clicking on the note button. To read the note that is created, place the mouse pointer above a node's note icon.

Edit Parameters

This control manages the parameters established by users and available for use in configuring the nodes of the current job. Parameters (named variables) are user-defined, specific to each job and applied to formulas found in a variety of nodes.



Checking the Prompt for Value box will cause a pop-up dialog box to appear any time the job is run requesting the user enter a new value for the parameter.

Undo/Redo

Use these buttons to undo or redo any recent actions performed in the Job Workspace.

Save, and Save and Exit

Use the first button to save any current work. Use the green checkmark to save any current work and exit the node or exit the job.

Wizards

IMPORT SCORING MODEL (with/without SEP)

Overview

When users of the Rapid Insight Analytics product create a predictive model, it is saved as an ".rism" file. That file contains the mathematical formula, the optional standard error of the prediction (SEP) and all the related variables that define the model. It's typically used within Analytics to apply probability scores to records - trying to predict the behavior the model was designed to address.

The Import Scoring Model Wizard allows a user of Veera to make use of that same ".rism" model file. This way, Veera can be used to assign probability scores, then be able to report on the results.

Scheduling a scoring process is also possible – something not available in Analytics. The wizard translates the contents of the model into nodes – recreating the formula, creating additional variables if necessary, replacing missing data with the appropriate substitute values, etc.

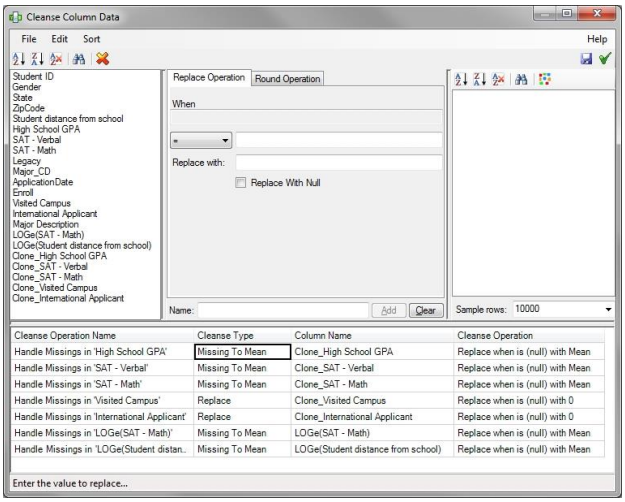
Adding a Model to a Job

The Modeling Wizard is accessed by right-clicking on a node or connection and selecting the menu entry Wizard > Import Scoring Model. A navigation window opens, allowing the desired .rism modeling file to be selected. Once a model file is chosen, several nodes are added at that location.

Create Variables Transform

If new variables created in Analytics also appear in the predictive model's formula, the Modeling Wizard creates a Transform node to recreate them in Veera. This Transform behaves just like the standard node added by a user. Contents can be edited, removed or the whole node deleted. If no variables created in Analytics appear in the model's formula, then this node will not be created by the Modeling Wizard.

If the model uses created variables that, in turn, were used to create still more variables, then multiple transforms may be produced to enable this in the job.

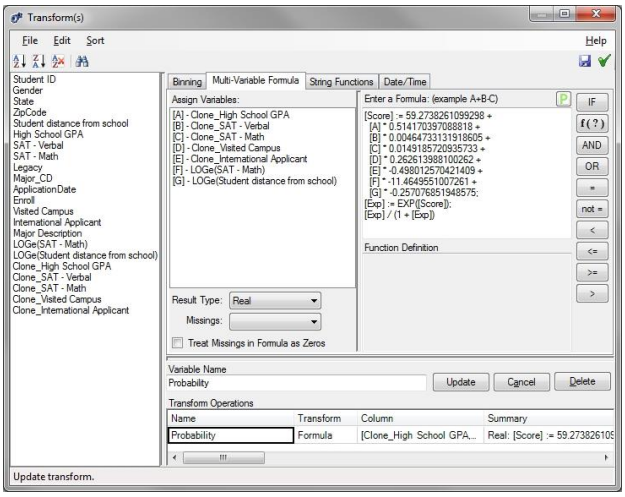


Clone Columns Transform

All variables participating in the modeling that weren't created at the *Create Variables* stage are duplicated here. This is done to permit more effective replacement of missing values later in the modeling process. Duplicate fields are labeled using the prefix "Clone_".

Missing Values Handling Cleanse

The Modeling file often contains instructions on how to handle values missing from the dataset. Settings within the Transform nodes will replace missing entries with zeros or with the column's mean value when appropriate. This later Cleanse function is available only in the model importation process and is not otherwise editable.



Calculate Probability Transform

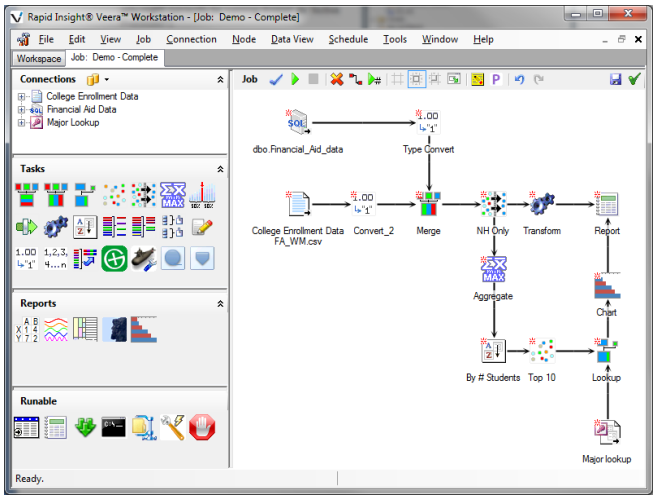
The Modeling Wizard always creates a Transform node to incorporate the probability model formula into the Veera job. If the formula uses variables that are not available at this location in the job, the formula will be displayed in red, indicating a problem. Note that this Transform behaves just like the standard node added by a user. Contents can be edited, removed or the whole node deleted. The scoring results are stored in a new field called "Probability".

Drop Created Columns Rename

This node removes the "cloned" and created columns produced as part of the model import. Only the new "Probability" column is retained.

JOBS IN VEERA

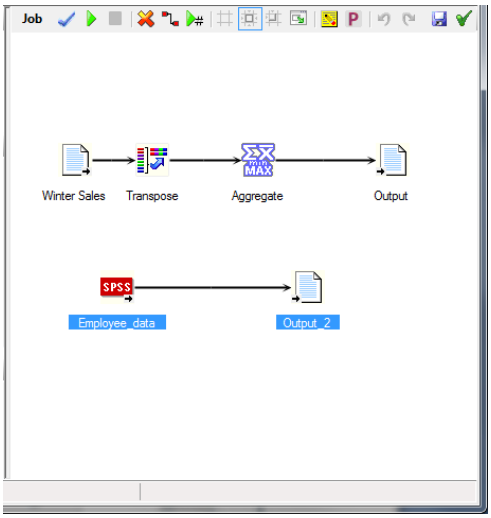
Jobs Overview



Jobs are projects, created by users, that gather data from one or more data sources (Data Connections), manipulate that data with various tools (known as Tasks or Reports), format that data using several reporting styles (known as Reports) and produce one or more outputs in the form of files or reports (each known as a Runable).

Creating Jobs

Creating a job involves several steps. These steps may be performed any number of times and in any order desired.



PLACE NODES (CONNECTIONS, TASKS AND RUNABLES) INTO A JOB

These components are placed into the Job Workspace in one of three ways:

- Double-clicking on the Connection, Task or Runable icon, or
- Dragged and Dropped
- Right-click on a Connection (only) and select "Add Input Node"

Once in the Job Workspace, icons are referred to as "nodes". Nodes may be repositioned by dragging and dropping them.

Nodes may be removed from the Job Workspace by:

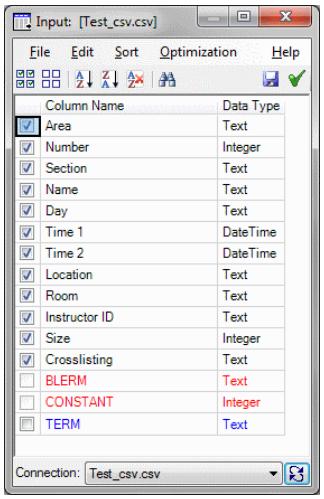
- Selecting the node and pressing the DEL key
- Right-click on the node and selecting "Delete" from the menu
- Draw a group select box around several nodes, and then use the "Delete Selected Item(s)" tool from the Job Workspace Toolbar.

RESYNCRONIZING A TEXT SOURCE INPUT NODE

Changes made to a text file data source may not always appear in the related Input Node – or worse, an error may result. In the past, replacing an affected Input Node was the only solution. Now, clicking

the “Resynchronize to Connection” button allows an Input Node to recognize and reflect any changes in its text source’s schema.

Resynchronizing an Input Node to reflect changes in its text type data source is a two-step process. First, check to see if the File Properties of the Connection Table need to be updated.

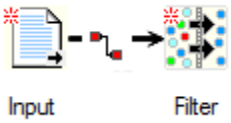


- Right-click on the table’s entry in the Connections window and select “Text Properties”
- If you receive a “Schema doesn’t match file” message, click the “Discard Schema” button located in the upper right of the window
- Click “Finish”

Second, open the configuration window of each affected Input Node by double-clicking on it. The button will be found in the bottom right corner of the configuration window. Click on the button to resync the node to the new schema. Removals will appear in red, new entries in blue. Save and close the window.

CONNECTING NODES TO CREATE PROCESS PATHS

Connection Methods



Nodes can be connected in one of several ways:

- Use the Job Workspace toolbar tool Node Connect Mode
- Use Alt-Left Mouse to drag the source node to the destination node
- Right-click the source, select “Begin Connecting Nodes”, then select the destination
- While holding Alt-Left Mouse, draw a group select box around several unconnected nodes, and then release the mouse button.
- Drag a node over an existing connection between two other nodes. When the connecting line turns blue, drop the node to insert it into the existing path at that point.
- Drag and drop a new node (the destination) onto an existing (source) node.

When connected, a line graphic be drawn between the nodes. An arrowhead at one end of the line will indicate the direction data will flow.

Disconnection Methods

To remove a connection to a node:

- Right-click on a connecting line and select “Delete” from the menu.
- Select a connecting line and press the DEL key.
- Select a connecting line and then use the “Delete Selected Item(s)” tool from the Job Workspace Toolbar.
- Right-click on any node (except those with multiple input or output connections) and select DISCONNECT or DELETE from the menu.

Connection Rules

Some connection rules to consider:

- Data Connection nodes can never be the endpoint of a connection from another node.

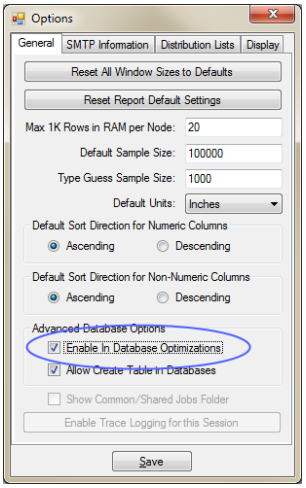
- Except for Output Files, runable nodes cannot be the starting point of a connection to another node.
- Call Job, Command, Compress/Uncompress, and FTP nodes can never be connected to another node
- Only a few nodes can accept more than one input. These include:
    - Append Table
    - Merge Table
    - Lookup Column Data
    - Output Report
- These nodes should directly output only to Output Table and Report nodes:
    - Format Column Data
    - Cross Tab Report
    - Frequency Report
    - GroupBy Report
    - Profile Report

CONFIGURE NODES TO DEFINE A PROCESS

Each node is configured differently. Please refer to the section of this document describing the specific node for guidance.

ENABLING OPTIMIZATION TO IMPROVE A PROCESS

Optimization is a data processing option that takes advantage of the filtering and sorting capabilities of data source host servers (if any exist) when a job is run.



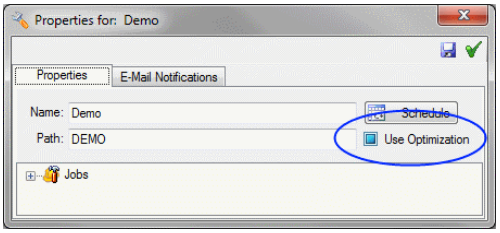
Optimization Program Option

The "Enable In Database Optimizations" control under the TOOLS > OPTIONS menu determines the global default setting of the option. Only Jobs whose "Use Optimization" properties are set to use the program value are affected. Enabled is the default setting.

Optimization Job Property

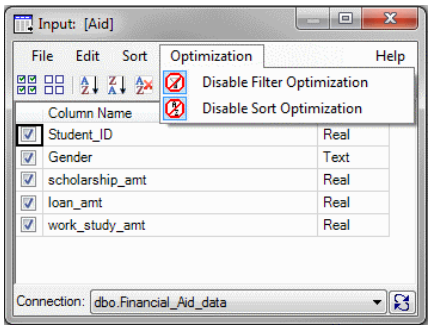
The "Use Optimization" property under the JOB > PROPERTIES menu determines the Optimization use status for the current Job. The control has three states, selected by the user:

- *Box is blue* (default) – Optimization is enabled or disabled in the job based on the program's global Optimization setting
- *Box is empty* – Optimization is disabled and cannot be used by any node in the job
- *Box is checked* – Optimization is enabled for use by nodes in the job, subject to their specific settings.



Optimization Node Property

Each Input Node may be individually configured by the user to permit or deny the use of its data server to optimize filtering and/or sorting functions when the job is run. These setting only have an effect when Optimization is also enabled in the job's properties.



- *Enable (*default*)/Disable Filter Optimization*
- *Enable (*default*)/Disable Sort Optimization*

Additionally, each Filter Node in a job may be individually configured to permit or deny optimizing its specific filtering task. Each Sort Node may also be individually configured to permit or deny optimizing its specific sorting task. In both cases, these setting only have an effect when Optimization is also enabled at both the Job and Input Node levels.

CLONING, COPYING AND PASTING NODES

Cloning Nodes

Cloning one or more nodes effectively copies the selected icons, their interconnections and any connections providing data to them, and pastes them immediately into another part of the same job. Once those nodes to be cloned have been selected (by individual Ctrl-left clicks, or by "boxing in" the nodes) the user may either

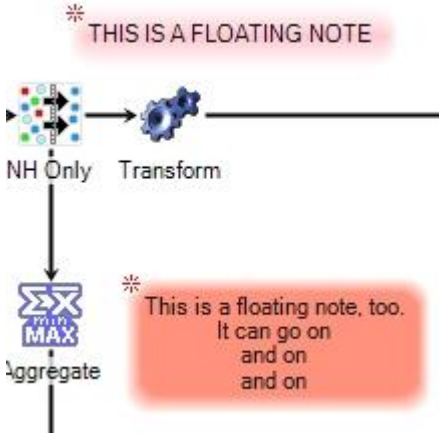
- Right-click on part of the selection and select Clone from the menu that appears, or
- Ctrl-left mouse on part of the selection and drag the cloned nodes to their new location.

Copying and Pasting Nodes

Copying and pasting one or more selected nodes and their connections operates much like cloning nodes, but with two important differences – the user has more control over where the new nodes are placed and copied nodes may be pasted into other jobs.

Once the nodes to be copied have been chosen (by individual Ctrl-left clicks, or by "boxing in" the nodes) the user right-clicks on part of the selection and clicks Copy from the menu that appears. The user picks where in the same job or in another job the nodes are to be pasted before right-clicking and selecting Paste from the pop-up menu.

Notating Jobs ("Floating Notes")



In addition to the "yellow sticky" notes that may be attached to nodes using the Edit Notes tool, users can imbed "floating notes" into a job. To create a floating note, users must right-click on any open space in the job and select Create Floating Note from the menu that appears. A text box opens where the content of the note is entered. To save the note, the user simply clicks the mouse outside of the text box. There is no cap on the number of floating notes that can be added to a job.

Like other nodes, floating notes may be repositioned, cloned, copied, pasted and deleted. Their contents may be edited by double-clicking on the node or by right-clicking and selecting Edit from the menu.

Floating notes may not be attached to other nodes, however.

The contents of a floating note are always visible and appear against a selectable background color. This background color may be changed by right-clicking on the note and selecting Set Color from the menu. Floating note defaults (background color, font color, type and size) are not editable.

Testing Jobs

There are several tools available to evaluate a job during and following its construction.

VALIDATE A JOB

Use the "Validate Job" tool from the Job Workspace Toolbar to check the job before running. Reviews the job and alerts the user to any potential issues in the job. Veera highlights each issue with a caution symbol above any nodes that are causing a problem.

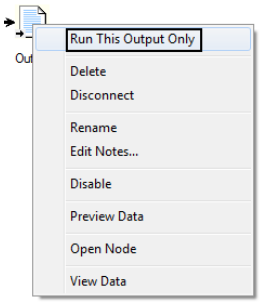
PREVIEW DATA

The user can right-click on any node (except Connections, report or FTP) to select "Preview Data" from the menu to begin. This runs a sample set of records through the job up to and through the node where the preview was requested. This allows users to evaluate the results of their work at any point in the process. The size of the sample set can be edited manually, and the default sample may be changed under the TOOLS > OPTIONS > GENERAL menu.

Running Jobs

"RUN JOB" TOOLBAR CONTROL

This control is used to run (or pause) the job currently in view. When the job is running, the button toggles to all pause. Press the button at any point to halt the current status of the job. All available data records are used and all Runables not currently disabled will be populated.



RUN TO THIS OUTPUT ONLY

A user may right-click on any Runable node to select "Run This Output Only" from the menu. This runs the job, but only through the nodes necessary to provide data to the selected output.

DISABLE

Runables may be individually disabled, to keep them from participating in any running of their job. Right-click on any Runable node and select "Disable" from the menu. Nodes that have been disabled will appear bordered in red.

RUNNING JOBS FROM THE COMMAND LINE

Veera jobs may be run using a command executed from the Command Line Prompt or the RUN function under the Windows Start menu. The command itself is comprised of two parts. The first is the file path where the Veera program file "VeeraWorkstation.exe" is located. On a machine using the Windows 7 OS, this would be:

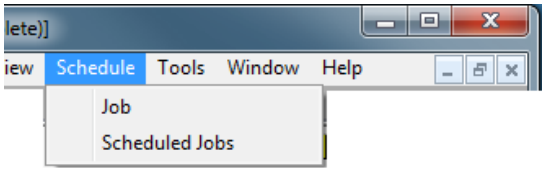
C:\Program Files (x86)\Rapid Insight Inc\Veera\VeeraWorkstation.exe

Next would be the actual command to run a job ("/runjob"), followed by the name of the job and its organizational structure within Veera placed in quotes (i.e. "/Testing/New Freshmen Retention") A fully-assembled command would read something like this...

C:\Program Files (x86)\Rapid Insight Inc\Veera\VeeraWorkstation.exe /runjob "/Testing/New Freshmen Retention"

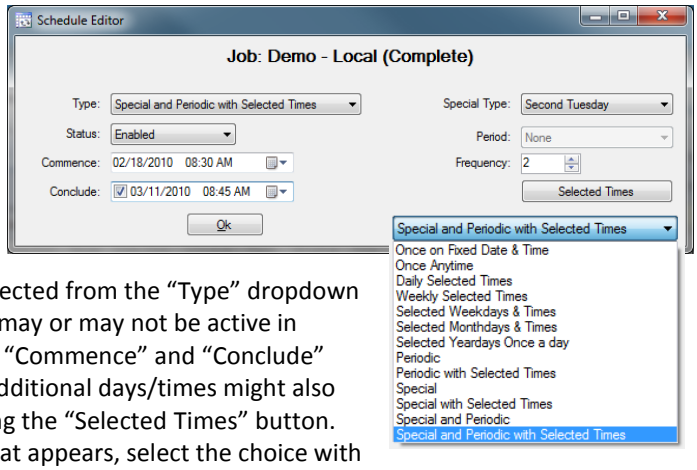
Scheduling Jobs

Veera permits users to schedule jobs to be run at later dates and times. Jobs may be scheduled as single events or as reoccurring actions.



SCHEDULE EDITOR

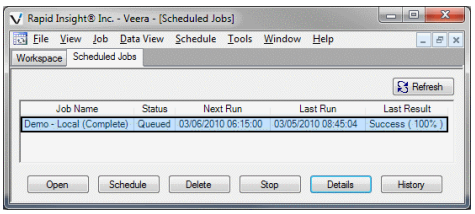
To configure a new event or edit an existing one for the current job, open the "Schedule" menu on the main program toolbar and select "Job". The Schedule Viewer will open to display the existing schedule. Click the "Edit Schedule" button to open the Schedule Editor window.



The styles of scheduling available are selected from the "Type" dropdown list. Once a type is selected, other fields may or may not be active in response to the choice. In most cases, a "Commence" and "Conclude" date and time must be entered. When additional days/times might also need to be chosen, this is done by clicking the "Selected Times" button. To select a date or time on the screen that appears, select the choice with the mouse then click the "Set" button.

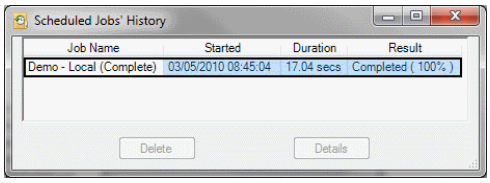
SCHEDULED JOBS TAB

Select Schedule > Scheduled Jobs from the toolbar menu to review all jobs currently scheduled. This will open a new tab in the program labeled "Scheduled Jobs". NOTE: Veera must be open for a scheduled job to run.



SCHEDULED JOBS DETAILS AND HISTORY

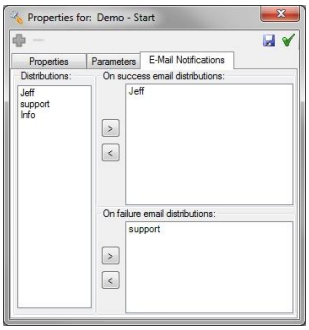
The "Detail" and "History" buttons on the Scheduled Jobs tab open windows that provide additional information on jobs that have been run and their results when selected.



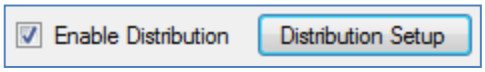
SENDING EMAIL NOTIFICATIONS FROM SCHEDULED JOBS

Scheduled jobs may be configured to email notification of their success or failure to one or more recipients. Right-click on the job name listed on the Workspace Tab and select Properties from the

menu. The Email Notifications tab lists all the email recipients entered into Veera. It provides two fields, On Success and On Failure, into which they may be copied. When a scheduled job is run, an outcome email is sent to those on the designated distribution list.



Distributing Reports by Email

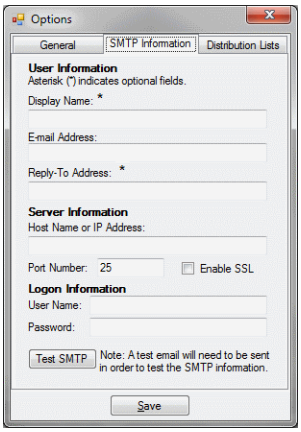


Reports can be set up to auto-email themselves when created by a job run. To configure this feature:

- Select Tools > Options from the main toolbar menu
- Enter local email service setting on the SMTP Information and Distribution Lists tabs

To configure a particular report node to use the feature:

- Open the report setup window and check Enable Distribution
- Click the Distribution Setup button and select the recipient(s)



Saving Jobs

Jobs are saved by:

- Clicking the “Save” or “Save and Exit” controls on the Job Workspace toolbar, or
- Selecting the Job > Save option from the main program menu

Exporting and Importing Jobs

Veera allows users to share their jobs by exporting and importing them individually. This is done by either:

- Selecting the Job > Export option from the main program menu,
- Right-clicking on the job from the Workspace tab and select “Export” from the menu,
- Drag and drop the job from its location in the Jobs section of the Workspace tab to the desired location on the computer

Jobs will be saved as files with the Veera Job File type (.vjf)

To import a job (the new job will appear in the Jobs section of the Workspace tab):

- Right-click in the Workspace > Jobs section and select Import Job and select the .vjf file to be imported, or
- Select Job > Import Job from the main toolbar menu and select the .vjf file to be imported, or

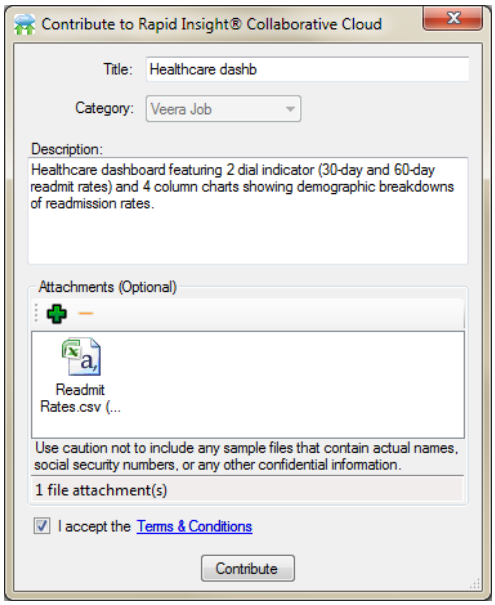
- Drag and drop the .vjf from its location on the computer into the desired folder of the Jobs section of the Workspace tab.

Imported jobs often need to be reconnected to a data source in the new environment. Either…

- Create connections and select files/tables whose names match those in the job, or
- Remove the job's current connections and use existing connections to replace them.

Collaborative Cloud

Rapid Insight hosts a free forum for users to share and trade copies of their Veera work with one another – the Collaborative Cloud. Currently, four types of content may be contributed to and copied from the Collaborative Cloud – jobs, transforms, chart styles and add-ins. This forum is accessed from within Veera.


Contribute to Rapid Insight® Collaborative Cloud
Title: Healthcare dashb
Category: Veera Job
Description:
Healthcare dashboard featuring 2 dial indicator (30-day and 60-day readmit rates) and 4 column charts showing demographic breakdowns of readmission rates.
Attachments (Optional)
Readmit Rates.csv (...
Use caution not to include any sample files that contain actual names, social security numbers, or any other confidential information.
1 file attachment(s)
I accept the Terms & Conditions
Contribute

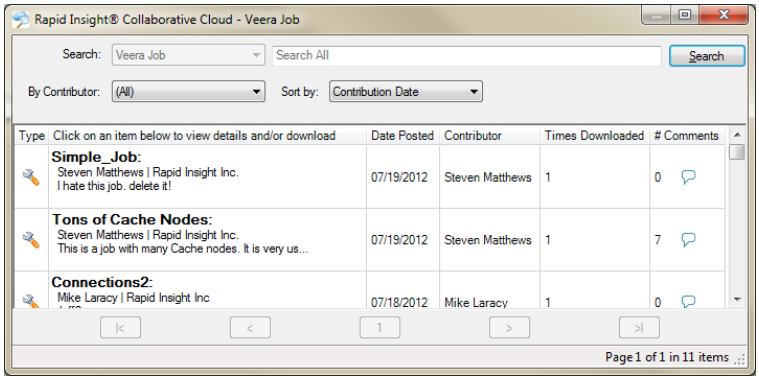
CONTRIBUTING TO THE COLLABORATIVE CLOUD

Right-click on the item to be uploaded (job, transform, chart style, add-in) then select the Contribute (item type) to RI Collaborative Cloud menu option. For example, right-click on a Veera job within the Jobs section of the Workspace tab. Once selected, the Contribute to Rapid Insight Collaborative Cloud window will open with the original name of the item already entered at the top.

The user must enter a unique name, a description of the item and check the Terms and Conditions box before the item can be contributed. Additional files, typically related sample data, may also be contributed as part of the submission. Click the Contribute button to perform the transfer.

GETTING ITEMS FROM THE COLLABORATIVE CLOUD

To copy an item from the Collaborative Cloud and add it to the list of those available, right-click on the table or folder where items of that type are listed. For example, right-click a job folder within the Workspace Jobs section where the job should be stored. Select Get Job from RI Collaborative Cloud from the list of options. A clean copy of the Rapid Insight Collaborative Cloud window will open. To see what items of that type are available to download, enter specific search criteria (or use Search All) in the Search field before clicking the Search button. A list of items, their titles, descriptions, and dates posted to the Collaborative Cloud will list. This list may be sorted on one of several options selected from the Sort By control.

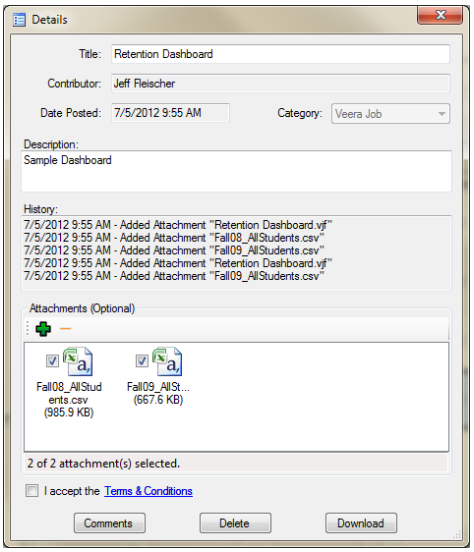


Double-clicking on an entry will open the item's Details window. In addition to information on the item itself, attached files will also be listed. Once the Terms and Conditions box is checked, clicking the Download button on the Details page will start the process of adding the item. Any attached files will also be downloaded, with the user being directed to select the destination folder.

CONTRIBUTING AND READING COMMENTS ABOUT ITEMS IN THE COLLABORATIVE CLOUD

Users may read comments on Collaborative Cloud items by clicking in its # Comments field or by clicking the Comments button on the items Details window. A separate Comments window displaying all the comments their authors and their contribution dates will open.

To add a comment, click into the lower half of the Comments window and start typing. Clicking the Add Comment button will upload the text as a new entry.



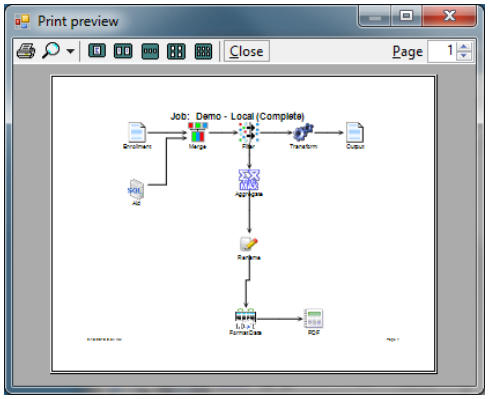
DELETING ITEMS FROM THE COLLABORATIVE CLOUD

Only the contributor of an item may delete it from the Collaborative Cloud. A Delete button will appear at the bottom of the item's Details page. Clicking the button will permanently remove the item.

Printing Jobs

There is an option to print the job. Go to File, and then Print Preview. It will then generate a preview of what the job looks like. If printing from there, it will have the job itself as well as all of the underlying functionality (connection names/location, node specifics, notes, output names & locations).

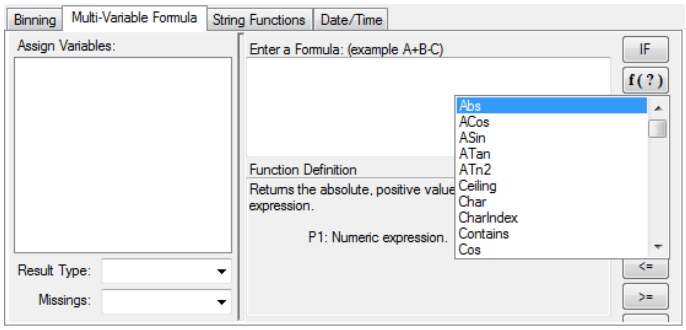
The larger the job, the longer it may take to generate the print preview. Veera will alert you to it's progress in the 'Generating Previews' box.



Once all pages have cached, the Print preview window will appear. The first page will contain a screen shot of the job itself. Subsequent pages will contain every detail of the job. Users can page through by hitting the up or down arrow in the upper right portion.

APPENDIX A - TASK FUNCTIONS SUMMARY

Function Descriptions (Multi-Variable Transform Task)



Abs	ABS( )	Returns the absolute, positive value of the given numeric expression
ACos	ACOS( )	Returns the angle, in radians, whose cosine is the given real expression
ASin	ASIN( )	Returns the angle, in radians, whose sine is the given real expression
ATan	ATAN( )	Returns the angle in radians whose tangent is the given real expression
ATn2	ATN2(#y, #x)	Returns the angle, in radians, whose tangent is the quotient (Y/X) of given real expressions
Ceiling	CEILING( )	Returns the smallest integer, greater than, or equal to, the given numeric expression
Char	CHAR( )	A string function that converts an int ASCII code to a character
CharIndex	CHARINDEX('string',)	Returns the starting position of the specified expression in a character string. Returns -1 if not found
Contains	CONTAINS('string',)	Returns 1 if the specified expression is in the character string, otherwise returns 0
Cos	COS( )	Returns the trigonometric cosine of the given angle (in radians) in the given expression
Cot	COT( )	Returns the trigonometric cotangent of the specified angle (in radians) in the given real expression
Date	DATE('')	Converts a string to a date
DateStr	DATESTR( )	Convert a date to a string
DateStr	DATESTR(, 'd')	Format a date as a string
Day	DAY( )	Returns an integer representing the day date-part of the specified date (1-31)
DayOfWeek	DAYOFWEEK( )	Returns a string representing the day date-part of the specified date (Sunday, Monday, etc.)
DayOfWeekN	DAYOFWEEKN( )	Returns an integer representing the day date-part of the specified date (1-7)
DayOfYear	DAYOFYEAR( )	Returns an integer representing the day date-part of

		the specified date (1-366)
DaysBetween	DAYSBETWEEN(, date)	Returns an integer representing the #of days between 2 dates
Degrees	DEGREES( )	Given an angle in radians, returns the corresponding angle in degrees
DistanceBetween	DISTANCEBETWEEN(, zipcode)	Returns a real representing the # of miles between 2 zipcodes
DistanceBetweenLatLon	DISTANCEBETWEENLATLON(, lon1, lat2, lon2)	Returns a real representing the # of miles between 2 Latitude/Longitude coordinate pairs.
DistanceBetweenMGRS	DISTANCEBETWEENMGRS(, mgrsCoord)	Returns a integer representing the # of meters between 2 MGRS coordinates (in same GZD).
DistanceFrom	DISTANCEFROM(, 'zipcode')	Returns a real representing the #of miles between a zipcode and a constant zip code
DistanceFromLatLon	DISTANCEFROMLATLON(, varLon1, constLat2, constLon2)	Returns a real representing the # of miles between a variable and a constant Latitude/Longitude coordinate pair.
DistanceFromMGRS	DISTANCEFROMMGRS(, 'mgrsCoord')	Returns a real representing the # of meters between a MGRS coordinate and a constant MGRS coordinate (in same GZD).
Exp	EXP( )	Returns the exponential value of the given real expression
Floor	FLOOR( )	Returns the largest integer less than or equal to the given numeric expression
Greatest	GREATEST(, expr, ...)	Returns the largest value in a list of 2 or more values
Hour	HOUR( )	Returns an integer that represents the hour part of a specified datetime
HoursBetween	HOURSBETWEEN(, date)	Returns an integer representing the # of hours between 2 dates
If	IF(, trueValue, falseValue)	Tests an expression result, returns one value if TRUE and another value if FALSE
IsNull	ISNULL(, replacement_value)	Tests if an expression result is null, returns the result if it is not null, otherwise a replacement value
Is Null	(IS NULL)	Tests if an expression result is null, evaluates to Boolean
Least	LEAST(, expr, ...)	Returns the smallest value in a list of 2 or more values
Left	LEFT(, #len)	Returns the left part of a string the specified number of characters in length
Len	LEN( )	Returns the number of characters of the given string, excluding trailing blanks
Log	LOG( )	Returns the natural logarithm of the given real expression
Log10	LOG10( )	Returns the base-10 logarithm of the given real expression
Lower	LOWER( )	Returns a character expression after converting uppercase character data to lowercase
LTrim	LTRIM( )	Returns a character expression after removing leading blanks
MatchesRegEx	MATCHESREGEX(, 'regex')	Tests if an expression result matches a regular expression. (See TRANSFORM for additional info.)
MetersToMiles	METERSTOMILES( )	Returns the real numbers of miles equivalent to the specified number of meters.

Minute	MINUTE( )	Returns an integer that represents the hour part of a specified datetime
MinutesBetween	MINUTESBETWEEN(, date)	Returns an integer representing the # of minutes between 2 dates
Month	MONTH( )	Returns an integer that represents the month part of a specified date (1-12)
MonthOfYear	MONTHOFYEAR( )	Returns a string that represents the month part of a specified date (January, February, etc.)
MonthsBetween	MONTHSBETWEEN(, date)	Returns an integer representing the # of months between 2 dates
MonthsBetween	MONTHSBETWEEN(, date, 1)	Returns an integer representing the absolute # of months between 2 dates.
Now	NOW()	Returns the current date/time
Nullif	NULLIF(, expr)	Returns a null if two expression are equivalent
Num	NUM( )	Returns numeric data converted from character data
PadLeft	PADLEFT(, #len, ' ')	Returns a string padded on the left with specified character to the specified length
PadRight	PADRIGHT(, #len, ' ')	Returns a string padded on the right with specified character to the specified length
PI	PI()	Returns the constant value of PI (3.14…)
Power	POWER(, #pow)	Returns the value of the given expression to the specified power
Quarter	QUARTER( )	Returns an integer representing the 'Quarter' specified date falls between
Radians	RADIANS( )	Returns radians when a numeric expression, in degrees, is entered
Random	RANDOM()	Returns a random number between 0.0 and 1.0
Replace	REPLACE(, 'find', 'new')	Replaces all occurrences of the first string expression with the second string expression
RemoveLeft	REMOVELEFT(, #cnt)	Removes specified number of characters from left end of string expression
RemoveRight	REMOVERIGHT(, #cnt)	Removes specified number of characters from right end of string expression
Reverse	REVERSE( )	Returns the reverse of a character expression
Right	RIGHT(, #len)	Returns the right part of a string the specified number of characters in length
Round	ROUND( )	Round value to the nearest integer value
RTrim	RTRIM( )	Returns a character string after truncating all trailing blanks
Second	SECOND( )	Returns an integer that represents the second part of a specified datetime
SecondsBetween	SECONDSBETWEEN(, date)	Returns an integer representing the # of seconds between 2 dates
Sign	SIGN( )	Returns the positive (+1), zero (0), or negative (-1) sign of the given expression
Sin	SIN( )	Returns the trigonometric sine of the given angle (in radians) in an approximate numeric (real) expression
Space	SPACE( )	Returns a string of repeated spaces
Square	SQUARE( )	Returns the square of a given expression

Sqrt	SQRT( )	Returns the square root of the given expression
Str	STR( )	Returns the character data converted from numeric data
Stuff	STUFF(, #start, #len, 'new')	Deletes a specified length of characters and inserts another set of characters at a specified starting point
SubField	SUBFIELD(, #fieldNum)	Returns the Nth 'sub-field' from a string where the fields are delimited by commas
SubField	SUBFIELD(,#fieldNum, ',')	Returns the Nth 'sub-field' from a string where the fields are delimited by the specified delimiter (default is comma)
SubString	SUBSTRING(, #start)	Returns part of a string beginning at the specified start position to the end of the string
SubString	SUBSTRING(, #start, #len)	Returns part of a string beginning at the specified start position and continuing for the specified length
Tan	TAN( )	Returns the tangent of the input expression
Today	TODAY()	Returns the current date
Upper	UPPER( )	Returns a character expression with lowercase character data converted to uppercase
Week	WEEK( )	Returns an integer expression representing the week that the specified date falls in (1-53)
Weekday	WEEKDAY( )	Returns 'Weekday' or 'Weekend'
WorkdaysBetween	WORKDAYSBETWEEN(, date)	Returns an integer representing the # of workdays between 2 dates
Year	YEAR( )	Returns an integer that represents the year part of a specified date
YearsBetween	YEARSBETWEEN(, date)	Returns an integer representing the # of years between 2 dates
YearsBetween	YEARSBETWEEN(, date, 1)	Returns an integer representing the absolute # of years between 2 dates.
ZipCode	ZIPCODE( )	Returns a 5 character zipcode converted from string or numeric data. Illegal values are output as text

Function Operators

Because functions have such a high priority they almost always require their parameters be in parentheses to achieve the expected/correct result.

"ABS [A]" is the same as "ABS ([A])", but "ABS [A][B]" is not "ABS ([A]*[B])", but is "ABS([A])*[B]"*

PRECEDENCE	SYMBOL	TYPE OF OPERATION	ASSOCIATIVELY
1	()	Expression	Left to right
2		Scalar Functions	Left to right
3	- ~ !	Unary	Right to left
4	* / % **	Multiplicative	Left to right
5	+ -	Additive	Left to right
6	<< >>	Bitwise shift	Left to right
7	< > <= >=	Relational	Left to right
8	= == <> != IS	Equality	Left to right
9	&	Bitwise-AND	Left to right
10	^	Bitwise-exclusive-OR	Left to right
11	|	Bitwise-OR (inclusive)	Left to right
12	BETWEEN	Logical-BETWEEN	Left to right
13	IN	Logical-IN	Left to right
14	LIKE	Logical-LIKE	Left to right
15	&& AND	Logical-AND	Left to right
16	|| OR	Logical-OR	Left to right
17	??	Null-Coalescing	Left to right
18	?:	Inline-If/Then	Left to right
19	,	List	Left to right

Date and Time Format Specifiers

Many functions require or allow certain formatting options to be specified.

SPECIFIER	DESCRIPTION	EXAMPLE
"d"	The day of the month, from 1 through 31.	6/1/2009 1:45:30 PM -> 1
"dd"	The day of the month, from 01 through 31.	6/1/2009 1:45:30 PM -> 01
"ddd"	The abbreviated name of the day of the week.	6/15/2009 1:45:30 PM -> Mon (en-US)
"dddd"	The full name of the day of the week.	6/15/2009 1:45:30 PM -> Monday (en-US)
"f"	The tenths of a second in a date and time value.	6/15/2009 13:45:30.617 -> 6
"ff"	The hundredths of a second in a date and time value.	6/15/2009 13:45:30.617 -> 61
"fff"	The milliseconds in a date and time value.	6/15/2009 13:45:30.617 -> 617
"ffff"	The ten thousandths of a second in a date and time value.	6/15/2009 13:45:30.6175 -> 6175
"fffff"	The hundred thousandths of a second in a date and time value.	6/15/2009 13:45:30.61754 -> 61754
"ffffff"	The millionths of a second in a date and time value.	6/15/2009 13:45:30.617542 -> 617542
"fffffff"	The ten millionths of a second in a date and time value.	6/15/2009 13:45:30.6175425 -> 6175425
"F"	If non-zero, the tenths of a second in a date and time value.	6/15/2009 13:45:30.617 -> 6
"FF"	If non-zero, the hundredths of a second in a date and time value.	6/15/2009 13:45:30.617 -> 61
"FFF"	If non-zero, the milliseconds in a date and time value.	6/15/2009 13:45:30.617 -> 617
"FFFF"	If non-zero, the ten thousandths of a second in a date and time value.	6/1/2009 13:45:30.5275 -> 5275
"FFFFF"	If non-zero, the hundred thousandths of a second in a date and time value.	6/15/2009 13:45:30.61754 -> 61754
"FFFFFF"	If non-zero, the millionths of a second in a date and time value.	6/15/2009 13:45:30.617542 -> 617542
"FFFFFFF"	If non-zero, the ten millionths of a second in a date and time value.	6/15/2009 13:45:30.6175425 -> 6175425
"g", "gg"	The period or era.	6/15/2009 1:45:30 PM -> A.D.
"h"	The hour, using a 12-hour clock from 1 to 12.	6/15/2009 1:45:30 AM -> 1
"hh"	The hour, using a 12-hour clock from 01 to 12.	6/15/2009 1:45:30 AM -> 01
"H"	The hour, using a 24-hour clock from 0 to 23.	6/15/2009 1:45:30 AM -> 1
"HH"	The hour, using a 24-hour clock from 00 to 23.	6/15/2009 1:45:30 AM -> 01
"K"	Time zone information.	6/15/2009 1:45:30 AM -07:00 --> -07:00
"m"	The minute, from 0 through 59.	6/15/2009 1:09:30 AM -> 9

"mm"	The minute, from 00 through 59.	6/15/2009 1:09:30 AM -> 09
"M"	The month, from 1 through 12.	6/15/2009 1:45:30 PM -> 6
"MM"	The month, from 01 through 12.	6/15/2009 1:45:30 PM -> 06
"MMM"	The abbreviated name of the month.	6/15/2009 1:45:30 PM -> Jun (en-US)
"MMMM"	The full name of the month.	6/15/2009 1:45:30 PM -> June (en-US)
"s"	The second, from 0 through 59.	6/15/2009 1:45:09 PM -> 9
"ss"	The second, from 00 through 59.	6/15/2009 1:45:09 PM -> 09
"t"	The first character of the AM/PM designator.	6/15/2009 1:45:30 PM -> P (en-US)
"tt"	The AM/PM designator.	6/15/2009 1:45:30 PM -> PM (en-US)
"y"	The year, from 0 to 99.	1/1/0001 12:00:00 AM -> 1
"yy"	The year, from 00 to 99.	1/1/0001 12:00:00 AM -> 01
"yyy"	The year, with a minimum of three digits.	1/1/0001 12:00:00 AM -> 001
"yyyy"	The year as a four-digit number.	1/1/0001 12:00:00 AM -> 0001
"yyyyy"	The year as a five-digit number.	1/1/0001 12:00:00 AM -> 00001
"z"	Hours offset from UTC, with no leading zeros.	6/15/2009 1:45:30 PM -07:00 -> -7
"zz"	Hours offset from UTC, with a leading zero for a single-digit value.	6/15/2009 1:45:30 PM -07:00 -> -07
"zzz"	Hours and minutes offset from UTC.	6/15/2009 1:45:30 PM -07:00 -> -07:00
":"	The time separator.	6/15/2009 1:45:30 PM -> : (en-US)
"/"	The date separator.	6/15/2009 1:45:30 PM -> / (en-US)

Special Parameters

This section documents unique parameters that do not fit neatly into other categories yet expand the user's abilities and contribute to the utility of the program.

SYMBOL	TYPE	BEHAVIOR	DESCRIPTION
*	Parameter	Wildcard	When an asterisk is used as a formula parameter, it acts as a wildcard. COMBINE INPUTS Table Pattern Example: **Enrollment Data*.*** Selects all files, regardless of type, that start with the characters "Enrollment Data".
Regex:	Functional Parameter	Wildcard	When the function is used as a formula parameter, it acts as a wildcard with features beyond those of an asterisk. COMBINE INPUTS Table Pattern Example: **Regex:CX..\.xls.*\.*$** Selects all worksheets from all Excel (.xls) files that start with the characters "CX" followed by exactly two characters.
[_]	Parameter	Lag	When an underscore in square brackets is used as a formula parameter, it applies the value of the previous record. Typically used in conjunction with the ISNULL function to avoid problems with the first record in the dataset. TRANSFORM Multi-variable Example: **IF([_] IS NULL, 100, [_] + 1)** Creates an incrementing series in the new column starting at 100.

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